Vol. 1020 Number 4

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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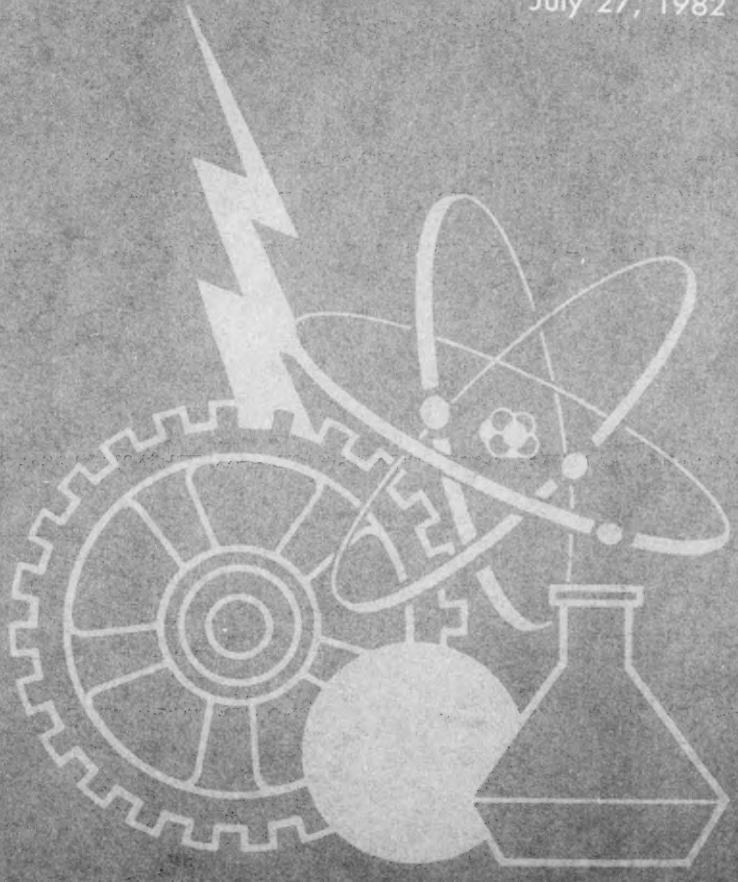

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Patent and Trademark Office

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

July 27, 1982 Volume 1020 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Jan. 19, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,944,876, Re. S.N. 380,074, Filed May 20, 1982, Cl. 315/205, RAPID STARTING OF GAS DISCHARGE LAMPS, James G. Helmuth, Owner of Record: *Chadwick Helmuth Co., Inc., Monrovia, Calif.,* Attorney or Agent: William W. Haefliger, Ex. Gp.: 256

4,092,867, Re. S.N. 381,002, Filed May 21, 1982, Cl. 73/609, ULTRASONIC SCANNING APPARATUS, Terrance Matzuk, Owner of Record: *Inventor,* Attorney or Agent: Robert D. Yeager, et al., Ex. Gp.: 244

4,204,256, Re. S.N. 380,340, Filed May 20, 1982, Cl. 364/431, INPUT-OUTPUT UNIT FOR A MICRO-PROCESSOR ENGINE CONTROL SYSTEM, Winfried Klotzner, Owner of Record: *Robert Bosch, G.M.B.H., Stuttgart Germany,* Attorney or Agent: Stephen H. Frishauf, et al., Ex. Gp.: 236

4,261,810, Re. S.N. 382,515, Filed May 27, 1982, Cl. 208/138, STARTUP PROCEDURE FOR REFORMING CATALYSTS, William D. McHale, et al., Owner of Record: *Mobil Oil Corp., New York, N.Y.,* Attorney or Agent: Charles A. Huggett, et al., Ex. Gp.: 116

4,290,433, Re. S.N. 381,170, Filed May 24, 1982, Cl. 128/665, METHOD AND APPARATUS FOR DETECTING THE PRESENCE OF CARIES IN TEETH USING VISIBLE LUMINESCENCE, Robert R. Alfano, Owner of Record: *Philips Medical System, Inc., Shelton, Conn.,* Attorney or Agent: S.C. Yuter, et al., Ex. Gp.: 335

4,319,988, Re. S.N. 382,150, Filed May 26, 1982, Cl. 209/172.5, SEPARATION OF HIGH GRADE MAGNETITE FROM FLY ASH, Robert G. Aldrich, Owner of Record: *Halomet, Inc., Manlius, N.Y.,* Attorney or Agent: Bert J. Lewen, et al., Ex. Gp.: 312

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,434,165, Reexam. No. 90/000,219, Requested: June 17, 1982, Cl. 5/61, HOSPITAL BED, Francis X. Keane, Owner of Record: *Kincoa, Ltd., Chicago, Ill.,* Attorney or Agent: Kurt Kelman, Ex. Gp.: 350, Requester: Robert A. Lundquist, Jonesboro, Ga.

4,146,489, Reexam. No. 90/000,220, Requested: June 23, 1982, Cl. 225/50, POLYOLEFIN GRAFT COPOLYMERS, Robert L. Stambaugh, et al., Owner of Record: *Rohm & Haas, Co., Philadelphia, Pa.,* Attorney or Agent: Patrick C. Baker, Ex. Gp.: 324, Requester: James H. Callahan, Esq., Kenyon & Kenyon, New York, N.Y.

4,291,597, Reexam. No. 90/000,217, Requested: June 10, 1982, Cl. 81/3.48, CORK EXTRACTOR, Herbert Allen, Owner of Record: *Hallen Co., Houston, Tex.,* Attorney or Agent: Margret Anderson, Ex. Gp.: 320, Requester: Hallen Co., Houston, Tex.

4,313,485, Reexam. No. 90/000,221, Requested: June 24, 1982, Cl. 160/328, TRANSPARENT ACCESS CURTAIN FOR COOLERS AND THE LIKE, Kenneth Gidge, et al., Owner of Record: *BSL Corp., Nashua, N.H.,* Attorney or Agent: Morse, Altman, Oates & Dacey, Ex. Gp.: 350, Requester: Necor Corp., Menlo Park, Calif.

Subscription Pricing Information

The annual subscription prices on the following publications have been changed as indicated below:

Title: Official Gazette, Patent Section	
First-class domestic mailing	$360.00
Fourth-class domestic mailing	250.00
Fourth-class foreign mailing	312.00
Single copies each, domestic	7.50
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Back issues will not be furnished.

This change is effective with Government Periodicals and Subscription Services Price List 36, dated Summer, 1982.

Foreign first-class mailing rates will be furnished upon request. Direct all inquiries and subscription requests to:

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U.S. Government Printing Office
Washington, D.C. 20402

Checks for subscription orders should be made payable to the Superintendent of Documents. If a Deposit Account with the Superintendent of Documents is to be used, please include the Deposit Account Number with the order.

THERESA A. BRELSFORD,
June 24, 1982. *Acting Assistant Commissioner for Administration.*

Patents Available for Licensing or Sale

4,319,748. SPORT TRAINING DEVICE. *Efim Alter,* 7533 Horrocks St., 1st Floor, Philadelphia, Pa., 19152.

4,255,697. CASH REGISTER POWER SUPPLY SYSTEM. *James A. Oliff, Esq., Stevens, Davis, Miller & Mosher,* 1911 Jefferson Davis Hwy., Suite 600, Crystal Mall 1, Arlington, Va. 22202, 703-920-8900.

4,154,444. GAME BOARD. *Nathan D. Grenell,* 815 Hanson St., Whitehall, Mich. 49461. 616-894-6350.

3,392,127. COMPOSITION OF POLYESTER RESIN AND SODIUM SILICATE. (Inquiries to) *Michael I. Wolfson, Esq., Blum, Kaplan, Friedman, Silberman & Beran,* 730 Third Ave., New York, N.Y. 10017 (212-867-2200).

4,341,730. BEAM DANCER FUSION DEVICE. *Henry B. Maier,* 6 Sealey Ave., 3K, Hempstead, L. I., New York 11550.

4,253,690. SAFETY KNOB. *Nathan Hollander,* 644 Salem Ave., Elizabeth, N.J., 07208.

General Electric Co., is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Application for license may be addressed to: Patent Counsel, Aerospace Control Systems Department, General Electric Co., P.O. Box 5000, Binghamton, New York 10390.

4,082,949. VARIABLE INTENSITY FLUORESCENT DISPLAY.

Applications for license may be addressed to: General Electric Co., Component Motor Division, 1635 Broadway, P.O. Box 2204, Fort Wayne, Ind., 46801-2204, Attention: Patent Counsel.

4,276,690. METHOD OF ASSEMBLING COMPONENTS OF A THERMOSTAT.

4,286,188. AMRPHOUS METAL HYSTERESIS MOTOR.

General Electric Co., is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed to: Group Patent Counsel, Lighting Business Group, General Electric Co., Nela Park, Cleveland, Ohio 44112.

3,517,198. LIGHT EMITTING AND ABSORBING DEVICES.

3,532,931. PHOTOFLASH ASSEMBLY FOR SEQUENTIALLY FLASHING LAMPS UTILIZING VOLTAGE AND CURRENT RESPONSIVE DEVICES.

3,672,992. METHOD OF FORMING GROUP III-V COMPOUND PHOTOEMITTERS HAVING A HIGH QUANTUM EFFICIENCY AND LONG WAVELENGTH RESPONSE.

3,676,314. METHOD OF ELECTRODEPOSITING VITREOUS COATINGS ATOP A MULTIAPERTURED SUBSTRATE.

3,679,385. MANUFACTURE OF INTERIOR COATED BULBS FOR HIGH TEMPERATURE GLASS LAMPS.

3,689,799. METHOD OF DOSING LAMPS.

3,715,245. SELECTIVE LIQUID PHASE EPITAXIAL GROWTH PROCESS.

3,724,990. PHOTOFLASH LAMP.

3,724,991. PHOTOFLASH LAMP.

3,732,460. CIRCUIT FOR INSTANT RESTART OF HIGH PRESSURE DISCHARGE LAMP.

3,737,960. REFLECTOR ALIGNMENT APPARATUS.

3,739,221. ELECTRIC LAMP BASE END STRUCTURE.

3,753,024. GLOW LAMP WITH NICKEL-PLATED ELECTRODES.

3,759,602. INHIBITING D-C NOTCHING EFFECT IN INCANDESCENT LAMP FILAMENTS.

3,760,237. SOLID STATE LAMP ASSEMBLY HAVING CONICAL LIGHT DIRECTOR.

3,769,694. OHMIC CONTACT FOR GROUP III-V P-TYPE SEMICONDUCTORS.

3,774,086. SOLID STATE LAMP HAVING VISIBLE-EMITTING PHOSPHOR AT EDGE OF INFRARED-EMITTING ELEMENT.

3,776,685. FLASHLAMP PRIMER PRECOATING.

3,783,437. LAMP AND SOCKET FOR DECORATIVE STRING SET.

3,785,020. METHOD OF BASING ELECTRICAL DEVICES.

3,805,347. SOLID STATE LAMP CONSTRUCTION.

3,814,971. FILL GAS MIXTURE FOR GLOW LAMPS.

3,821,616. MONOLITHIC SEMICONDUCTOR DISPLAY DEVICES.

3,833,802. WIDE ANGLE OPTICAL SYSTEM FOR UNIFORM PLANAR ILLUMINATION.

3,850,688. OHMIC CONTACT FOR P-TYPE GROUP III-V SEMICONDUCTORS.

3,864,598. INCANDESCENT LAMP WITH INTERNAL FUSE.

3,871,008. REFLECTIVE MULTIPLE CONTACT FOR SEMICONDUCTOR LIGHT CONVERSION ELEMENTS.

3,871,016. REFLECTIVE COATED MULTIPLE CONTACT FOR SEMICONDUCTOR LIGHT CONVERSION ELEMENTS.

3,873,175. MINIATURE LAMP CONSTRUCTION AND METHOD OF MANUFACTURE.

3,889,286. TRANSPARENT MULTIPLE CONTACT FOR SEMICONDUCTOR LIGHT CONVERSION ELEMENTS.

3,893,798. PHOTOFLASH LAMP.

3,905,078. METHOD OF MANUFACTURING MINIATURE LAMPS.

3,909,929. METHOD OF MAKING CONTACTS TO SEMICONDUCTOR LIGHT CONVERSION ELEMENTS.

3,914,143. PHOTOFLASH LAMP PRIMER COMPOSITION.

3,956,625. MULTIPLE FLASHLAMP ARRAY.

3,959,684. MINIATURE LAMP CONSTRUCTION AND METHOD OF MANUFACTURE.

3,959,860. METHOD OF MAKING NON-SHORTING PHOTOFLASH LAMP.

3,972,626. AUTORANGING DIGITAL LUXMETER.

3,982,185. LAMP BASING USING UV CURABLE ADHESIVE.

3,989,970. METAL HALIDE HIGH-INTENSITY DISCHARGE LAMP HAVING IMPROVED RESTART CAPABILITY.

3,997,808. MOUNTING FOR SINGLE-ENDED LAMP.

4,006,377. FILTER ATTACHMENT FOR PARABOLIC REFLECTOR LAMPS.

4,035,631. PROJECTOR LAMP REFLECTOR.

4,039,889. BLUE-WHITE GLOW LAMP.

4,052,638. FLARE-WEDGE LAMP.

4,076,489. METHOD FOR COATING PHOTOFLASH LAMPS.

4,111,562. HYDRAULIC GIMBAL SYSTEM FOR BEAM PROJECTION LAMPS.

4,139,794. WEDGE-PIN GLASS HALOGEN LAMP WITH TRANSVERSE REFERENCE FEATURE.

4,144,418. VOLTAGE RESPONSIVE SWITCH.

4,146,814. PINCH AND BASE STRUCTURE FOR SINGLE-ENDED LAMPS.

4,182,607. PHOTOFLASH LAMP UNIT UTILIZING RADIATION AND VOLTAGE RESPONSIVE SWITCH DEVICES.

4,182,608. PHOTOFLASH LAMP UNIT UTILIZING RADIATION AND VOLTAGE RESPONSIVE SWITCH DEVICES.

4,208,609. SQUIRM RESISTANT FILAMENT.

4,210,841. ALL PLASTIC HEADLAMP.

4,223,373. PHOTOFLASH LAMP ARRAY HAVING REFLECTIVE COATING MEANS.

4,233,023. PHOTOFLASH LAMP HAVING EXPANDABLE BURNING VOLUME.

4,233,543. INTERNAL SHUNT FOR SERIES CONNECTED LAMPS.

4,234,915. ORNAMENTAL ATTACHMENT FOR DECORATIVE STRING SETS.

4,235,336. FLASH ARRAY PACKAGE.

4,259,712. SEALED, PREFOCUSED MOUNT FOR PLASTIC PAR LAMP.

4,280,173. HEAT SHIELD FOR PLASTIC HEADLAMP.

4,282,565. SEALED, PREFOCUSED MOUNT FOR PLASTIC PAR LAMP.

4,287,448. MECHANICAL STOP MEANS FOR A PREFOCUSED PLASTIC PAR LAMP.

4,290,747. PHOTOFLASH LAMP ARRAY CIRCUIT BOARD HAVING RADIATION SENSITIVE FUSE ELEMENTS.

4,290,748. PHOTOFLASH LAMP ARRAY CIRCUIT BOARD HAVING RADIATION SENSITIVE FUSE ELEMENTS.

4,318,161. SNAP IN COUPLING ASSEMBLY FOR A VEHICLE HEADLAMP HAVING A TRIM RIM INTEGRAL THEREWITH.

4,318,162. SNAP IN COUPLING ASSEMBLY FOR A VEHICLE HEADLAMP.

4,322,784. VEHICLE HEADLAMP HAVING AN INTEGRALLY MOLDED TRIM REFERENCE PLANE.

Re. 27,879. OHMIC CONTACT FOR GROUP III-V P-TYPE SEMICONDUCTORS.

Des. 250,816. PHOTOFLASH LAMP UNIT.

Des. 250,817. PHOTOFLASH LAMP UNIT.

Des. 250,818. PHOTOFLASH LAMP UNIT.

Des. 250,819. PHOTOFLASH LAMP UNIT.

Des. 250,820. PHOTOFLASH LAMP UNIT.

Des. 250,821. PHOTOFLASH LAMP UNIT.

Des. 250,822. PHOTOFLASH LAMP UNIT.

Des. 251,091. PHOTOFLASH LAMP UNIT.

Des. 251,092. PHOTOFLASH LAMP UNIT.

Des. 256,397. PHOTOFLASH LAMP UNIT.

Des. 260,266. PHOTOFLASH LAMP UNIT.

Des. 260,268. PHOTOFLASH LAMP UNIT.

Des. 260,269. PHOTOFLASH LAMP UNIT.

Des. 260,270. PHOTOFLASH LAMP UNIT.

Des. 260,398. PHOTOFLASH LAMP UNIT.

The RCA Corp., offers to grant non-exclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under RCA patents should be addressed to RCA Corp., Sr. Vice President, Licensing, 30 Rockefeller Plz., New York, N.Y. 10020.

Re. 30,948. DYNAMIC CURRENT SUPPLY.

4,327,830. RECORD STAMPER PROTECTOR.

4,328,068. METHOD FOR END POINT DETECTION IN A PLASMA ETCHING PROCESS.

4,328,463. ENCODER FOR RECORDING INCREMENTAL CHANGES.

4,328,508. III-V QUATERNARY ALLOY PHOTODIODE.

4,328,575. DISC PLAYER HAVING TURNTABLE HEIGHT VARYING APPARATUS.

4,328,614. METHOD FOR THE MANUFACTURE OF PROCELAIN COATED METAL BOARDS HAVING INTERCONNECTIONS BETWEEN THE TOP AND BOTTOM SURFACES.

4,328,646. METHOD FOR PREPARING AN ABRASIVE COATING.

4,329,575. VIDEO DISC HAVING A LABEL FOR IDENTIFYING MATERIAL RECORDED THEREON.

4,329,600. OVERLOAD PROTECTION CIRCUIT FOR OUTPUT DRIVER.

4,329,618. HORIZONTAL DEFLECTION ENHANCEMENT FOR KINESCOPES.

4,329,648. METHOD OF CHECKING FOR ELECTRICAL FRIT BREAKDOWN IN KINESCOPES AND APPARATUS THEREFOR.

4,329,671. ALIGNMENT-INSENSITIVE SELF-CONVERGING IN-LINE COLOR DISPLAY.

4,329,697. INFORMATION RECORD.

4,329,702. LOW COST REDUCED BLOOMING DEVICE AND METHOD FOR MAKING THE SAME.

4,329,712. ADAPTIVE DISTORTION ELIMINATION CIRCUITRY FOR A VIDEO DISC PLAYER.

4,329,713. TELEVISION AUTOMATIC GAIN CONTROL SYSTEM.

4,329,714. AUDIO DISTORTION ELIMINATOR.

4,329,724. TAPE TRANSDUCER CARRIER WITH DIHEDRAL AND PROTRUSION ADJUSTMENT.

4,329,729. SIDE PINCUSHION MODULATOR CIRCUIT WITH OVERSTRESS PROTECTION.

4,330,213. OPTICAL LINE WIDTH MEASURING APPARATUS AND METHOD.

4,330,583. HIGH DENSITY INFORMATION RECORD LUBRICANTS.

4,330,671. POSITIVE RESIST FOR ELECTRON BEAM AND X-RAY LITHOGRAPHY AND METHOD OF USING SAME.

4,330,735. BEAM GUIDE STRUCTURE FOR A FLAT PANEL DISPLAY DEVICE.

4,330,792. VIDEO BLANKING CIRCUIT WITH CONTROLLED RATE OF UNBLANKING.

4,330,866. ARRANGEMENT FOR SELECTIVELY ROUTING A SIGNAL INDICA-

TIVE OF RECEIVED SIGNAL STRENGTH TO DIFFERENT PORTIONS OF A RADIO RECEIVER IN RESPONSE TO DIFFERENT LEVELS OF A CONTROL SIGNAL.

4,330,879. ADAPTIVE STYLUS KICKER USING DISC TRACK AND DISC INFORMATION.

4,330,881 VIDEO DISC APPARATUS FOR CLEARING FOREIGN MATTER FROM THE SIGNAL PICKUP STYLUS DURING PLAYBACK.

4,330,882. APPARATUS FOR MONITORING A WIDEBAND ELECTROMECHANICAL RECORDING SYSTEM.

4,330,915. TECHNIQUE FOR UNIFORM STYLUS CONFIGURATION.

4,331,700. METHOD FOR MAKING A COMPOSITE SUBSTRATE.

4,331,701. RUBIDIUM-CESIUM-ANTIMONY PHOTOCATHODE.

4,331,907. DEFLECTION CIRCUIT LINEARITY COIL.

4,331,938. INJECTION LASER DIODE ARRAY HAVING HIGH CONDUCTIVITY REGIONS IN THE SUBSTRATE.

4,331,979. LINE-SCAN STILL IMAGE REPRODUCER.

4,331,981. LINEAR HIGH GAIN SAMPLING AMPLIFIER.

4,331,982. SAMPLE AND HOLD CIRCUIT PARTICULARLY FOR SMALL SIGNALS.

DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Part 2
[Docket No. 2512-96]

Trademark Applications and Examination Proceedings; Trademark Interference, Concurrent Use, Opposition and Cancellation Proceedings; Trademark Post-Registration Proceedings

Agency: Patent and Trademark Office, Commerce.

Action: Proposed rulemaking.

Summary: Patent and Trademark Office proposes amendments of the rules of practice in trademark cases to clarify and to revise procedures for the examination of applications; appeals from final refusals of registration; the institution and conduct of trademark interference, concurrent use, opposition and cancellation proceedings; the examination of affidavits or declarations under §8 of the Trademark Act; the examination of applications to renew registrations under 9 of the Trademark Act; amendments to registrations under 7(d) of the Trademark Act; and petitions to the Commissioner. The proposed procedures revise or codify existing practices, or simplify procedures, or establish periods of time, to assist the orderly and prompt resolution of issues.

Date: Written comments by Sept. 27, 1982. Hearing, beginning at 10:00 a.m. Sept. 27, 1982.

Addresses: Address written comments to the Commissioner of Patents and Trademark, Washington, D.C. 20231. The hearing will be held in Room 11C24 of Bldg. 3, Crystal Plz., 2021 Jefferson Davis Hwy., Arlington, Va. Written comments and transcript of hearing will be available for public inspection in Room 11E10 of Bldg. 3, Crystal Plz., 2021 Jefferson Davis Hwy., Arlington, Va.

For Further Information Contact: Miss Janet E. Rice by telephone at (703) 557-3551 or by mail marked to her attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: The Patent and Trademark Office is considering amendments to the rules of practice in trademark cases to revise, simplify, rearrange, or delete existing rules, or to codify in rules certain practices which are currently in effect. The rules involved include those which concern the examination and amendment of ex parte applications; appeals to the Trademark Trial and Appeal Board from the final refusal of registration in ex parte applications; the institution and conduct of interference, concurrent use, opposition and cancellation proceedings before the Trademark Trial and Appeal Board; the examination of affidavits or declarations under §8 of the Trademark Act and subsequent proceedings if an affidavit or declaration is refused; the examination of applications for the renewal of registrations under §9 of the Trademark Act and subsequent proceedings if an application for renewal is refused; amendments of registrations under §7(d) of the Trademark Act; and petitions to the Commissioner.

The rules for which amendments are proposed are discussed below. (The designation "S" is used in the Code of Federal Regulations to denominate a rule; lettered ["(a)", "(b)", etc.] subdivisions are subsections of rules; numbered ["(1)", "(2)", etc.] subdivisions are paragraphs within sections or subsections.)

In this preamble to the proposed rulemaking; "Patent and Trademark Office" is abbreviated as "PTO" and "Trademark Trial and Appeal Board" is abbreviated as "TTAB."

Section 2.20. Subsection (b) is proposed to be added to codify the practice whereby a nonofficer of a corporation or association who is authorized to sign a notice of opposition or petition for cancellation may verify the pleading by a declaration in lieu of an oath or affirmation.

Section 2.27(e) is proposed to be added to permit the PTO to retain in confidence, not available for public inspection, any fruits in discovery filed under seal [see proposed amended §2.120(f)] pursuant to a protective order or any testimony filed under seal [see proposed amended §2.125(e)]. Conforming amendments are made in subsections (b) and (d).

Section 2.63 is proposed to be clarified and designated as subsection (a).

Section 2.63(b) is proposed to be added to codify the practice of allowing an applicant to petition to the Commissioner for relief from either an examiner's repeated but nonfinal formal requirement or a final requirement which is limited to subject matter which is appropriate for petitions to the Commissioner, as an alternative to appeal to the TTAB. The proposed rule also requires that a petition be timely and sets a time limit for action after denial of a peition. See proposed §2.146(b) for a description of nonpetitionable subject matter and proposed §2.146(d) for the time limit (thirty days) for a petition.

Section 2.64 is proposed to be designated as subsection (a) and revised to agree with the provision in §2.63(b), permitting petitions to the Commissioner concerning some requirements which have been made final.

Section 2.64(b) is proposed to be added to clarify the existing practice of replying to requests for reconsideration after final action, and to permit entry of amendments accompanying such requests if they place the application in condition for publication or in better form for appeal.

Section 2.65 is proposed to be ameded by the addition of a sentence to provide that a timely and proper petition under §2.63(b) avoids the abandonment of an application. An additional provision is proposed to permit the examiner to allow an applicant additional time to explain and supply an inadvertent omission which would other-

wise have resulted in the application being held abandoned.

Section 2.72 is proposed to be revised to allow nonmaterial changes in the drawing to be supported by specimens which were not necessarily in use at the time the original application was filed.

Section 2.81 is proposed to be revised to clarify the language of the rule.

Section 2.83 is proposed to be deleted because requests to consolidate applications are very rare and the procedure is unworkable. See Official Gazette notice of July 19, 1981, 1009 TMOG 17.

Section 2.94 is proposed to be deleted because interferences are declared only upon petition [see §2.91], which assumes proper review before an interference is declared, and existing §2.94 is unnecessary.

Section 2.95 is proposed to be deleted because the deletion of §2.94 makes §2.95 unnecessary.

Section 2.96 is proposed to be amended to codify existing practice on the issues determinable in an interference and the order of the parties and burden of proof. The last sentence in the amended rule states who is the junior party if two applications have the same filing date but different dates of execution of the applications.

Section 2.97 is proposed to be deleted because it is unnecessary in view of the codification in §2.96.

Section 2.98 is proposed to be amended to make the rule consistent with existing §2.91.

Section 2.99 is proposed to be amended in several respects. The rule has been reorganized to describe the procedure more clearly and logically. Subsection (a) of the proposed amended rule permits the examiner to require an applicant to make a prima facie showing of entitlement to a concurrent use registration if the application and other papers in the file do not show that there are conditions or limitations on the mode or place of use of the marks or the goods in connection with which the marks are used so as to make confusion, mistake, or deception not likely or that the applicant is relying upon a determination by a court of competent jurisdiction [see Trademark Act §2(d) proviso].

Section 2.99(b), (c), and (d)(1), as proposed, describe the procedure to be used to institute a concurrent use proceeding.

Section 2.99(d)(2) and (3), as proposed, codify existing practice on who must file an answer to a notice of institution of a concurrent use proceeding and the effect of not filing an answer.

Section 2.99(e), as proposed, codifies existing practice on the order of the parties and the burden of proof and states who is the junior party if two applications have the same filing date but different dates of execution of the applications. A person specified as an excepted user but who has not filed an application is stated to be a senior party to every party that has an application involved in the proceeding because a party without an application is seeking no relief and therefore has no burden of proving entitlement to relief.

Section 2.99(f), as proposed, privides for the issuance of a concurrent use registration upon the basis of a court's determination of the right of the parties to use their marks in commerce, without the institution of a proceeding by the TTAB, when all of the conditions specified in the rule are fulfilled.

Section 2.99(g), as proposed, codifies existing law that registrations and applications to register on the Supplemental Register and registrations under the Act of 1920 are not subject to concurrent use registration proceedings and implements §26 of the Trademark Act, which provides, inter alia, that applications for the registrations on the Supplemental Register shall not be subject to §17 of the Act, which is the statutory authority for a concurrent use registration proceeding [cf. existing §2.91(b)].

Sections 2.101 and 2.102 are proposed to be interchanged so that those two rules begin with the provisions for obtaining extensions of time to file an opposition and then provide for filing an opposition, thereby describing the procedures in their chronological sequence.

Section 2.101(a) and (b), as proposed, repeat, with revisions to clarify the provisions, existing §2.102(a).

Section 2.101(c), as proposed, codifies the existing practice under existing §2.102(b). In addition, proposed §2.101(c) provides for a maximum extended period, not to exceed 120 days from the date of publication of an application, within which to file a notice of opposition, except when there is a written stipulation or a showing of extraordinary circumstances, so as to avoid inordinate delays caused by ex parte requests for extensions of time.

Section 2.101(d), as proposed, codifies an existing practice which expedites the notification of the TTAB's action on a request for an extension of time.

Section 2.102(a), as proposed, states when an opposition proceeding is commenced, which is important for the application of §2.135.

Section 2.102(b), as proposed, indicates that a notice of opposition should be addressed to the TTAB, which helps to route mail within the PTO.

Section 2.102(c), as proposed, requires that a notice of opposition be filed within thirty days after publication of the application or prior to the expiration of a granted extension of time for filing a notice of opposition.

Section 2.102(d), as proposed, implements the requirement of 13 of the Trademark Act that a notice of opposition be verified, which requirement is contained in existing §2.101(a).

Section 2.102(e), as proposed, requires the payment of the statutory fee for an opposition, provides for the allocation of the fees that are submitted if they are insufficient for the number of classes being opposed or for the number of persons joined as party opposer, and permits the payment of additional fees for additional persons joined as party opposer in the notice of opposition in the same manner as the payment of additional fees for opposing additional classes in the application.

Section 2.102(f), as proposed, provides for the late payment of the opposition fee or fees, subject to the payment of one service charge on behalf of each person joined as a party opposer, when a notice of opposition is not accompanied by at least one full fee to oppose one class by one person, thereby continuing the practice provided by existing §2.101(c). Proposed §2.102(f), further, codifies the practice that, when the notice of opposition is filed without any fee or with a fee insufficient for at least one person to oppose one class in the application, all of the required fees must be submitted within the time fixed by the notice of defect, which will be issued by the TTAB.

Section 2.103, as proposed, clarifies existing §2.103.

Section 2.104, as proposed, clarifies existing §2.104.

Section 2.105, as proposed, clarifies existing §2.105 and codifies the practice thereunder.

Section 2.106(c), as proposed, codifies the practice under existing §2.106(c) that, after an answer is filed, a notice of opposition may be withdrawn without prejudice only with the written consent of the applicant.

Section 2.107, as proposed, codifies the practice under existing §2.107 whereby any pleading, including the answer, may be amended.

Section 2.111(a), as proposed, states when a cancellation proceeding is commenced, which is important for the application of §2.134.

Section 2.111(b), as proposed, indicates that a petition for cancellation should be addressed to the TTAB, which helps to route mail within the PTO.

Section 2.111(c), as proposed, implements the requirement of 14 and 24 of the Trademark Act that a petition for concellation be verified, which requirement is contained in existing §2.112.

Section 2.111(d), as proposed, states the requirement for the payment of the fee(s) due upon filing a petition for cancellation, and, parallel to proposed amended §2.102(e), provides for the allocation of fees and payment of additional fees when more than one class is sought to be cancelled or more than one person is joined as a party petitioner or when both situations exist.

Section 2.112, as proposed, removes the reference to

verification of a petition for cancellation, which is placed in proposed §2.111(c), to clarify the language of the rule, and to state in proposed §2.112(b) the conditions for filing a consolidated petition for cancellation of different registrations owned by the same party.

Section 2.113 is proposed, to be amended to describe the procedure for notifying a registrant of the filing of a petition for cancellation of his registration. The provision in existing §2.113 for notifying a party of the need to correct a formally defective petition has been deleted. It is, and will continue to be, the practice of the TTAB to notify a party when he files a petition without the fee for cancelling at least one class in the registration sought to be cancelled or when a verification has been omitted or is defective. Problems arise when a defective petition for cancellation is filed near the end of the statute of limitations provided by 14(a) or (b) of the Trademark Act. If no fee, or a fee insufficient for a petition to cancel at least one class in respondent's registration, is received prior to the critical fifth anniversary, the TTAB is without jurisdiction to entertain the petition and the minimum jurisdictional fee cannot be paid after the five-year statuate of limitations is effective. Jurisdiction to accept provisionally a defectively executed or verified petition and to prescribe a time to file a properly executed document resides exclusively with the Commissioner pursuant to 35 U.S.C. 26. A petition to the Commissioner is governed by existing §2.146 (a)(2) or proposed §2.146(a)(2).

Section 2.115 is proposed, to be amended in the same manner as proposed amended §2.107.

Section 2.116(b) is proposed to be amended to clarify the language and intent of existing §2.116(b).

Section 2.116(c) is proposed to be amended to clarify existing §2.116(c). Any complaint filed by a party in an interference or concurrent use proceeding would be a petition for cancellation, and the position of the parties in the consolidated proceeding will be set by the TTAB as required.

Section 2.117 is proposed to be amended by the addition of subsections (b) and (c) to codify existing practice when a suspension of proceedings is considered.

Section 2.117(d) is proposed to be added to permit a party to move, or parties to stipulate, for suspension, which usually occurs when negotiations for settlement are undertaken and the parties want proceedings suspended for that purpose.

Section 2.120 is proposed to be amended in several respects commencing with a reorganization of the rule to state how discovery may be taken, then how discovery may be compelled, then how admissions may be requested and the sufficiency of admissions or objectives to requests therefor may be tested, and then how the results of discovery may be used in a proceeding.

Section 2.120(a), as proposed, clarifies the language of the introductory paragraph of existing §2.120.

Section 2.120(b), as proposed, is made applicable to domestic parties, clarifies existing §2.120(a)(1), and codifies the practice thereunder.

Section 2.120(c)(1), as proposed, restates in modified form the provisions of existing §2.120(a)(2), and in addition, proposed §2.120(c)(1) permits oral discovery depositions in foreign countries on motion for good cause or by stipulation of the parties.

Section 2.120(c)(2), as proposed, provides for oral discovery depositions within the United States of foreign parties or their officers, etc. if they will be in the United States during a discovery period.

Section 2.120(d), as proposed, makes specific provision for requests for production and codifies the practice for this kind of discovery.

Section 2.120(e) as proposed, clarifies existing §2.120 (c)(1) and codifies the practices on motions to compel discovery.

Section 2.120(f), as proposed, adds provisions pertaining to protective orders during discovery.

Section 2.1120(g), as proposed, clarifies existing §2.120 (c)(2) and codifies the practice on sanctions for failing to obey orders pertaining to discovery.

Section 2.120(h), as proposed, adds to the discovery rules provisions pertaining to requests for admissions and codifies the practice pertaining to requests for admissions.

Section 2.120(i), as proposed, codifies the practice on pre-trial conferences to resolve dispute over pre-trial questions or issues.

Section 2.120(j), as proposed, clarifies existing §2.120 (a)(3) and codifies the practice on the filing with the TTAB of matter obtained during discovery and the use thereof at trial.

Section 2.121, as proposed, clarifies existing §2.121 and codifies the practice thereunder.

Section 2.122, as proposed, consolidates in one section the rules govering the introduction and admission of evidence in inter partes proceedings before the TTAB.

Section 2.122(a), as proposed, identifies the sources of the law of evidence to be applied in inter partes proceedings.

Section 2.122(b)(1), as proposed, clarifies the language and codifies the practice under existing §2.122(a).

Section 2.122(b)(2) and (3), as proposed, clarify existing §2.126 and codify the practice under existing §2.126.

Section 2.122(c)(1), as proposed, clarifies and adds to the provisions of existing §2.122(c) relating to printed publications. Proposed §2.122(c) would require that an official record or copy thereof offered under the rule be an authentic record or copy pursuant to the Federal Rules of Evidence and would also require that, when a copy of a relevant portion of a printed publication is offered, the copy include the title page and any other page needed to show the place and date of publication, the name and address of the publisher, and the name of the author or the editor, which information is intended to enable the party against whom the evidence is offered to identify what it is.

Section 2.122(c)(2), as proposed, would amend existing §2.122(b) insofar as the existing rule governs the introduction of a copy of a registration owned by any party to a proceeding. An important change would be that a copy of a registration introduction by a party on his own behalf would have to be a certified copy (see 7(e) of the Trademark Act). A second important change would be the elimination of the practice, under existing §2.122(b), of filing, as evidence in a proceeding, two copies showing status and title of a registration pleaded by an opposer or petitioner for cancellation, or filing an order for such copies, with the notice of opposition or petition for cancellation. The procedure whereby an opposer or cancellation petitioner could submit an order for copies of his registration for subsequent attaching to his pleading has not worked well in practice. As a result, a number of opposition and cancellation proceedings have gone to final hearing without a copy of the opposer's or cancellation petitioner's registration, which had to be obtained at that point, provided that the party relying thereon could show that a timely correct order has been sent to the PTO. Since, it is more likely than not that an order for two certified copies of a registration showing status and title would not be filled in time for filing with a notice of opposition or petition for cancellation §2.122 is proposed to be amended to provide for the filing thereof only with a notice of reliance during a testimony period. This would not preclude attaching a copy of a pleaded registration as an exhibit to a notice of opposition or petition for cancellation purely for informational purposes but not for evidentiary purposes.

Section 2.122(d), as proposed, codifies the practice that copies of third-party registrations need not be certified to be offered in evidence.

Section 2.122(e), as proposed, clarifies existing §2.122 (d) and codifies the practice under existing §2.122(d).

Section 2.123(a)(1), as proposed, provides that testimony may be taken by depositions upon oral questions or upon written questions and further provides that a party against whom a testimonial deposition will be taken may move to have the deposition taken upon oral questions if the witness, even though he may be a foreign party or a person who usually resides in a foreign country, is, or at the time of the deposition will be, in the United States

or any territory under the control and jurisdiction of the United States.

Section 2.123(a)(2), as proposed, provides that testimony in a foreign country is ordinarily to be taken by a deposition upon written questions but that the party against whom a testimonial deposition will be taken may move to have it taken by oral questions in a foreign country and further provides that the parties may stipulate to have testimony taken by an oral deposition in a foreign country.

Section 2.123(e)(3), as proposed, codifies the practice that a party who did not receive a proper notice of the taking of a deposition with respect to any witness may cross-examine that witness under protest while preserving his right to move to strike the whole of the testimony of that witness.

Section 2.123(k), as proposed, codifies the practice that objections to testimony on arounds of alleged lack of relevancy, materiality, or competency should be raised in a brief at final hearing but should not be raised by a motion to strike testimony regularly taken.

Section 2.124, as proposed, sets out the procedure to be followed in taking a discovery deposition or a testimonial deposition upon written questions.

Section 2.124(a), as proposed, provides that a deposition upon written questions may be taken before any of the persons described in Rule 28 of the Federal Rules of Civil Procedure.

Section 2.124(b)(1) as proposed, provides for the kind of notice which must be served by a party desiring to take a testimonial deposition upon written questions and further provides that a copy of the notice, without the questions, must be filed with the TTAB.

Section 2.124(b)(2), as proposed, provides for the kind of notice which must be served by a party desiring to take a discovery deposition upon written questions and further provides that a copy of the notice, without the questions, must be filed with the TTAB. This paragraph also provides that, if the name of the person to be deposed is not known to the party who will take the deposition, a general description sufficient to identify the class or group to whom the prospective witness belongs shall be stated in the notice and the party to be deposed shall designate one or more discovery witnesses.

Section 2.124(c), as proposed requires that every notice of deposition upon written questions name or describe by title the officer before whom the deposition will be taken.

Section 2.124(d)(1), as proposed, specifies the procedure and timetable for serving the questions, objections, and substitute questions for a deposition upon written questions.

Section 2.124(d)(2), as proposed, provides that the TTAB may reset the times specified in proposed §2.124 (d)(1), and, when a testimonial deposition is to be taken upon written questions, may suspend or reschedule other proceedings in the matter to allow for the completion of the deposition.

Section 2.124(e), as proposed, provides the procedure for sending the notice and questions to the officer designated in the notice, the taking of the deposition, and the certification and mailing of the transcript to the party who took the deposition.

Section 2.124(f), as proposed, provides for the service of copies of the transcript and exhibits, states that the party who took the deposition is responsible for the correctness of the transcript, permits the use of a discovery deposition as provided by proposed §2.120(j), and provides for the filing with the TTAB of a testimonial deposition, a copy thereof, and the exhibits.

Section 2.124(g), as proposed, states that objections to questions and answers may be considered at final hearing.

Section 2.125(a), as proposed, provides for the service of a transcript of an oral testimonial deposition and the exhibits, and, in respect of that requirement, continues the rule of existing §2.125(a).

Section 2.125(b), as proposed, makes the party who took a deposition responsible for its correctness and for serving the adverse party with a corrected transcript or corrected pages.

Section 2.125(c), as proposed, continues the requirement of existing §2.125(a) that a certified transcript, a copy of the transcript, and the exhibits be filed promptly with the TTAB and further provides that notice of filing be served on the adverse party and that a copy of the notice be filed with the TTAB.

Section 2.125(d), as proposed, continues the requirements of existing §2.125(b).

Section 2.125(e), as proposed, provides that the TTAB, on motion, may order that any part of a deposition transcript or exhibits that directly disclose a trade secret or other confidential research development, or commercial information may be filed under seal and kept confidential and provides for sanctions for failure to comply with the order.

Section 2.126 is proposed to be deleted because the substance of the existing section has been shifted to proposed §2.122(b)(2) and(3).

Section 2.127(a), (b), and (c), as proposed, clarify existing §2.127(a), (b), and (c) and codify the practice under existing §2.127(a), (b), and(c).

Section 2.127(d), as proposed, codifies the practice with respect to suspending all matters in a case not germane to a potentially dispositive motion until the determination thereof.

Section 2.128(a)(1), as proposed, clarifies existing §2.128(a) except that the rule requiring copies of a brief is shifted to proposed §2.128(b).

Section 2.128(a)(2), as proposed, codifies the practice of having the TTAB set the briefing schedule by order when proceedings are consolidated, or when there is a counterclaim, or when more than two parties are involved.

Section 2.128(a)(3), as proposed, contains a new provision enabling the TTAB to decide that a case has been conceded, resulting in an adverse judgment, when a party fails to file a brief at final hearing.

Section 2.128(b), as proposed, clarifies and codifies the practice under the last sentence of existing §2.128(a) and existing §2.128(b).

Section 2.129(a), as proposed, clarifies and codifies the practice under §2.128(c) and existing §2.129(a).

Section 2.129(b), as proposed, clarifies existing §2.129(b).

Section 2.129(c), as proposed, clarifies existing §2.129 (c), from which the language referring to a decision on a motion which is finally dispositive of a case has been deleted because any requests for reconsideration or modification of a decision issued on a motion would be made under proposed §2.127(b).

Section 2.131, as proposed, clarifies and codifies the practice under existing §2.131. The effect is to eliminate the dichotomy between inter partes and ex parte issues and to provide for the determination by the TTAB of all issues that have been expressly pleaded by the parties or tried by their express or implied consent and to reserve for remand to the examiner for reexamination only issues neither pleaded nor tried but which appear to make the mark of an applicant unregistrable.

Section 2.132(a), as proposed, changes the practice under existing §2.132(a) by eliminating the step of having the TTAB issue an order to the plaintiff to show cause why judgment should not be entered against him. Under the proposed §2.132(a), the plaintiff will have fifteen days from the date of service of the defendant's motion for dismissal within which to show why judgment should not be rendered against the plaintiff.

Section 2.132(b), as proposed, clarifies existing §2.132(b).

Section 2.134(a), as proposed, codifies the practice under existing §2.134 that the written consent of the adverse party is required to avoid judgment against a cancellation respondent who applies to cancel his registration under §7(d) of the Trademark Act while the registration is involved in a proceeding.

Section 2.134(b), as proposed, provides that, after the commencement of a cancellation proceeding, if a re-

spondent (registrant) permits his registration to be cancelled under §8 of the Trademark Act or fails to renew his registration under §9 of the Act, the resulting demise of the registration shall be deemed to be the equivalent of a cancellation of the registration by request of the respondent without the written consent of the adverse party and will result in judgment against the respondent §2.134(b) is proposed to avoid situations where a respondent in a cancellation proceeding may moot the case and avoid judgment because of the fortuitous circumstance that his registration happens to reach its sixth anniversary or twentieth anniversary while a proceeding is pending and the respondent exploits this situation by simply failing to file an affidavit under §8 of the Act or a renewal application under §9 of the Act.

Section 2.135, as proposed, codifies the practice under existing §2.135, which is parallel to the parties under existing §2.134 and proposed §2.134(a), that the written consent of the adverse party is required to avoid judgment against an applicant who abandons his application or mark while the application is involved in an opposition.

Section 2.142(a), as proposed, clarifies existing §2.142(a).

Section 2.142(b), as proposed, requires the examiner to file with the TTAB a statement answering every point in the appellant's brief and requires the examiner to file the statement within sixty days after appellant's brief is sent to the examiner by the TTAB.

Section 2.142(c), as proposed, codifies the practice that all requirements made by the examiner and not the subject of appeal shall be compiled with prior to the filing of an appeal.

Section 2.142(d), as proposed, provides that the record in the application should be complete prior to the filing of an appeal, states that the TTAB will ordinarily not consider additional evidence filed with the TTAB by the appellant or by the examiner after an appeal is filed, and provides that either the appellant or the examiner may request the TTAB to suspend the appeal and remand the application for further examination if the appellant or the examiner desires to introduce additional evidence. The usual situations where additional evidence may be offered arise under 2(e) or 2(f) of the Trademark Act where the examiner desires to introduce more evidence to support a refusal of registration or the appellant desires to introduce more evidence in support of a claim of acquired distinctiveness (secondary meaning).

Section 2.142(e)(1), as proposed, amends existing §2.142 (c), and codifies the practice under the existing rule, by changing the due date for a request for an oral hearing on an appeal from the date when the appellant's brief is filed to a date ten days after the due date for a reply brief.

Section 2.142(e)(2), as proposed, requires the examiner to present an oral argument if an oral argument is requested by the appellant.

Section 2.142(e)(3), as proposed, allots twenty minutes to the appellant for oral argument and ten minutes to the examiner for oral argument.

Section 2.142(f), as proposed, provides for situations, where, during an appeal, it appears to the TTAB that an issue not previously raised may render the mark of the appellant unregisterable, that is, when something on the face of the record on appeal indicates that a question concerning the registrability of the mark may exist but has not been considered. The proposed subsection provides the procedure to be followed by the TTAB, the examiner, and the appellant when the TTAB suspends an appeal and remands an application on the TTAB's own motion.

Section 2.146, as proposed, collects in one section the rules on petitions to the Commissioner in existing §§2.146, 2.147, and 2.148. For this reason it is proposed to delete §§2.147 and 2.148.

Section 2.142(a), as proposed, reflects the proposed change in §2.63(b) permitting petitions concerning some requirements which have been made final.

Section 2.146(b), as proposed, delineates classes of questions which are not considered to be appropriate subject matter for petitions to the Commissioner. These questions are substantive issues of registrability of marks and are considered to be appropriate for appeal to the TTAB.

Section 2.146(c), as proposed, specifies the contents of a petition to the Commissioner, and in this respect clarifies existing §2.146(b).

Section 2.146(d), as proposed, specifies the time limit for filing a petition on any matter except from a denial of a request for an extension of time to file an opposition, or from an interlocutory order of the TTAB, or from the refusal of an affidavit or declaration filed pursuant to §8 of the Trademark Act, or from the refusal of an application for the renewal of a registration filed under §9 of the Trademark Act.

Section 2.146(e), as proposed, provides time limits and specifies the procedure for a petition to the Commissioner from the denial of a request for an extension of time to file an opposition or from an interlocutory order of the TTAB. Proposed §2.146(e)(1) contains a new requirement that a petition from the denial of a request for an extension of time to oppose must be served on the applicant or his attorney and provides for a response by the applicant to the petition.

Section 2.146(f), as proposed, clarifies existing §2.146(c).

Section 2.146(g), as proposed, clarifies and codifies the practice under existing §2.146(d) and, in addition, makes §2.146 consistent with proposed §§2.63(b) and 2.65.

Section 2.146(h), as proposed, codifies the practice under existing §2.146(e) whereby authority to act on classes of petitions, in addition to any particular petition, has been delegated.

Section 2.145, as proposed, specifies the procedure when an affidavit or declaration filed under §8 of the Trademark Act is refused. The steps to be taken by the registrant to request reconsideration and to petition to the Commissioner and the time limits for such requests and petitions are stated.

Section 2.145(d), as proposed, states that a petition to the Commissioner for review of the action refusing the affidavit or declaration under the Trademark Act shall be a condition precedent to an appeal to or action for review by any court. This implements 21(a)(1) and (b)(1) of the Act, which provide, inter alia, that a registrant who has filed an affidavit under §8 of the Act who is dissatisfied with the decision of the Commissioner may appeal to the Court of Customs and Patent Appeals or may have remedy by a civil action.

Section 2.173(b), as proposed, clarifies the circumstances in which an amendment of the identification of goods or services of a registration is permitted. The proposed rule states that an identification of goods or services can be restricted or can be otherwise changed in ways that would not require republication of the mark.

Section 2.184, as proposed, specifies procedures and time limits for relief when an application for renewal of a registration under §9 of the Trademark Act is refused, in parallel with proposed §2.165.

Section 2.184(d), as proposed, is parallel to proposed § 2.165(d) and has the same statutory basis.

Section 2.186, as proposed, clarifies and codifies the practice under existing §2.186 that action with respect to an assigned application or registration may be taken by the assignee provided that the assignment has been recorded.

Environmental, energy, and other considerations: The proposed rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The proposed rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96–354) for several reasons. The rule change includes no additional or increased fees. Substantive rights to use valuable trademarks are not adversely affected. In general, the rule change will expedite proceedings before the Patent and Trademark Office, changing existing proce-

dures only where then can be made more equitable or simpler.

The proposed rule change does not impose a record keeping or reporting burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.* No additional information is required from the public. No additional records are required to be maintained by the Patent and Trademark Office because there are no additional fees or proceedings to monitor.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries. Federal, State, or local government agencies, or geographic regions. There will be no significant, adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

List of Subject Terms in 37 CFR Part 2:

Administrative practice and procedure, Courts, Lawyers, Trademarks.

Notice is hereby given that pursuant to the authority contained in Section 41 of the Trademark Act of July 5, 1946, as amended, (60 Stat. 427, 88 Stat. 1949, 15 U.S.C. 1123, as amended), the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by amending §§2.20, 2.27, 2.63, 2.64, 2.65, 2.72, 2.81, 2.96, 2.98, 2.99, 2.101, 2.102, 2.103, 2.104, 2.105, 2.106, 2.107, 2.111, 2.112, 2.113, 2.115, 2.116, 2.117, 2.120, 2.121, 2.122, 2.123, 2.124, 2.125, 2.127, 2.128, 2.129, 2.131, 2.132, 2.134, 2.135, 2.142, 2.146, 2.165, 2.173, 2.184, and 2.186, and by removing §§2.88, 2.94, 2.95, 2.97, 2.126, 2.147, and 2.148, as set forth below. Additions are indicated by arrows and deletions by brackets.

* * * * *

PART 2—RULES OF PRACTICE IN TRADEMARK COVERS

1. Section 2.20 is proposed to be amended by designating the present section as subsection (a) and adding a new subsection (b) to read as follows:

§2.20 Declaration(s) in lieu of oath.

* * * * *

► (b) A notice of opposition or petition for cancellation signed on behalf of a corporation or an association by a person who is authorized to sign the document but who is not an officer may be accompanied by a declaration as provided in subsection (a).◄

2. Section 2.27 is proposed to be amended by revising subsections (b) and (d) and adding a subsection (e) to read as follows:

§2.27 Pending trademark application index; access to applications

* * * * *

(b) ► Except as provided in subsection (e),◄ access to the file of a particular pending application will be permitted prior to publication under rule 2.80 upon written request.

* * * * *

(d) ► Except as provided in subsection (e),◄ after a mark has been registered, or published for opposition, the file of the application and all proceedings relating thereto are available for public inspection and copies of the papers may be furnished upon paying the fee therefor.

► (e) Any documents, tangible things, answer to interrogatories, or all or part of any discovery or testimonial deposition transcripts ordered to be filed under seal pursuant to a protective order issued or made by any court or by the Trademark Trial and Appeal Board in any proceeding involving an application or a registration shall be kept confidential and shall not be made available for public inspection or copying unless otherwise ordered by the court or the Board, or unless the party protected by the order voluntarily discloses the matter subject thereto.◄

3. Section 2.63 is proposed to be revised to read as follows:

§2.63 ► Reexamination. ◄ [Reexamination]

► (a) ◄ After response by the applicant, the application will be ► reexamined ◄ [re-examined] or reconsidered ► If ◄ [, and if the] registration is again refused or ► any ◄ formal requirements[s] ► is repeated, ◄ [insisted upon.] but ► the examiner's action is ◄ not stated to be final ► , ◄ the applicant may respond again.

►(b) After reexamination the applicant may respond by filing a timely petition to the Commissioner for relief from a formal requirement if: (1) The formal requirement is repeated but the Examiner's action is not made final; or (2) the examiner's action is made final and the action is limited to subject matter appropriate for petitions to the Commissioner (see §2.146(b)). If the petition is denied, the applicant shall have until six months from the date of the Office action which repeated the requirement or made it final or thirty days from the date of the decision on the petition, whichever date is later, to comply with the requirement. A formal requirement which is the subject of a petition decided by the Commissioner may not subsequently be the subject of an appeal to the Trademark Trial and Appeal Board.◄

4. Subject 2.64 is proposed to be amended by amending the present section and designating it as subsection (a) and adding a new subsection (b) to read as follows:

§2.64 Final Action.

► (a) ◄ On the first or any subsequent reexamination or reconsideration the refusal of the registration or the insistence upon a requirement may be stated to be final, whereupon applicant's response is limited to an appeal ► , ◄ or to a compliance with any requirement ► , or to a petition to the Commissioner if permitted by §2.63(b) ◄ .

► (b) During the period between a final action and expiration of the time for filing an appeal, the applicant may request the examiner to reconsider the final action. The filing of a request for reconsideration will not extend the time for filing an appeal or petitioning the Commissioner, but the examiner will reply to every request for reconsideration. Amendments accompanying requests for reconsideration after final action will be entered if they place the application in condition for publication or in better form for appeal.◄

5. Section 2.65 is proposed to be amended by revising the existing rule and identifying it as subsection (a) and adding a subsection (b) to read as follows:

§2.65 Abandonment.

► (a) ◄ If an applicant fails to respond, or to respond completely, within six months after the date an action is mailed, the application shall be deemed to have been abandoned. ► A timely petition to the Commissioner pursuant to §2.63(b) is a response which avoids abandonment of an application.◄

► (b) When action by the applicant is a bona fide attempt to advance the examination of the application and is substantially a complete response to the examiner's action, but consideration of some matter or compliance with some requirement has been inadvertently omitted, opportunity to explain and supply the omission may be given before the question of abandonment is considered.◄

6. Section 2.72 is proposed to be revised to read as follows:

§2.72 Amendments to description or drawing of the mark.

Amendments to the description or drawing of the mark may be permitted only if warranted by the specimens (or facsimiles) as originally filed, or supported by additional specimens (or facsimiles) and a supplemental affidavit or declaration in accordance with rule 2.20 alleging that the mark shown in the amended drawing ► is in use ◄ [was in actual use prior to the filing date of the application]. Amendments may not be made if the ► character ◄ [nature] of the mark is ► materially altered ◄ [changed thereby].

7. Section 2.81 is proposed to be revised to read as follows:

§2.81 Allowance of application.

If no opposition is filed with the time permitted [(§§2.101 and 2.102),] or ► any opposition is ◄ [if filed and] dismissed, and if no interference is declared ► and no ◄ [, or] concurrent use proceeding ► is ◄ instituted, the application will be prepared for issuance of the certificate of registration as provided in §2.151.

§2.88 [Removed]

8. It is proposed to remove §2.88, Applications may be combined.

§2.94 [Removed]

9. It is proposed to remove §2.94, Interference motions.

§2.95 [Removed]

10. It is proposed to remove §2.95, Decision on motion to dissolve.

11. Section 2.96 is proposed to be revised to read as follows:

§2.96 Issue; burden of proof.

The issue in an interference between applications ► is normally priority of use, but the rights of the parties to registration may also be determined. The party whose application involved in the interference has the latest filing date is the junior party and has the burden of proof. When there are more than two parties in an interference, a party whose application involved in the interference has a filing date between the filing dates of the earliest involved application and the latest involved application is a junior party to every party whose involved application has an earlier filing date and has the burden of proof as against every party whose application has an earlier filing date. If any applications involved in an interference have the same filing date, the application with the latest date of execution will be deemed to have the latest filing date and that applicant will be the junior party. The issue in an interference between an application and a registration shall be the same, but in the event the final decision is adverse to the registrant, a registration to the applicant will not be authorized so long as the interfering registration remains on the register. ◄ [shall be the respective rights of the parties to registration. The issue in an interference between an application and a registration shall be the same, but in the event the final decision is adverse to the registrant, a registration to the applicant will not be authorized so long as the interfering registration remains on the register. The party whose applications or registration involved in the interference has the latest filing date (the junior party) will be regarded as having the burden of proof.]

§2.97 [Removed]

12. it is proposed to remove Section 2.97, Enlargement of issue.

13. Section 2.98 is proposed to be revised to read as follows:

§2.98 Adding party to interference.

► A party may be added to an interference only upon petition to the Commissioner by that party. ◄ [If, during the pendency of an interference, another case appears involving substantially the same registrable subject matter, the Examiner of Trademarks may request the suspension of the interference for the purpose of adding said case. Such suspension will be granted as a matter of course if no testimony has been taken. If any testimony has been taken or is about to be taken, the case will not be added except upon approval of a member of the Trademark Trial and Appeal Board.] If ► an application which is or might be the subject of a petition for addition to an interference ◄ [the case] is not added, the ► examiner ◄ [Examiner of Trademarks] may suspend action on ► the application ◄ [such case] pending termination of the interference proceeding.

14. Section 2.99 is proposed to be revised to read as follows:

§2.99 Application to register as concurrent user.

(a) An application for registration as a lawful concurrent user will be examined in the same manner as other applications for registration. ► The examiner may require an applicant for registration as a concurrent user to make a prima facie showing that the applicant is entitled to a concurrent use registration. ◄ [When it is determined that the mark is ready for publication or allowance, except for questions relating to concurrent registration, the applicant may be required to furnish as many copies of his written application, specimens and drawing, as may be necessary. The Examiner of Trademarks shall prepare notices for the applicant and for each applicant, registrant, or user specified in the application for registration as a concurrent user. Such notices for the specified parties shall give the names and address of the applicant and of his attorney or other authorized representative, if any, together with the serial number and filing date of the application.]

(b) ► When it is determined that the mark is ready for publication, the applicant may be required to furnish as many copies of his application, specimens and drawing as may be necessary for the preparation of notices for each applicant, registrant or user specified as a concurrent user in the application for registration. ◄ [The notices shall be sent to each of the parties, in care of their attorneys or other representatives, if they have attorneys or other representatives of record, and if one of the parties is a registrant, a notice shall also be sent to him or his assignee of record. A copy of the application shall be forwarded with the notices to the parties specified in the application. An answer to the notice is not required in the case of an applicant or registrant whose application or registration is specified in the application to register as concurrent user but a statement, if desired, may be filed within forty days after the mailing of the notice; in the case of other parties specified in the application to register as concurrent user, answer must be filed within forty days after the mailing of the notice.]

(c) ► Upon receipt of the required by subsection (b), the examiner shall forward the application for concurrent use registration for publication in the Official Gazette as provided by §2.80. If no opposition is filed, or if any opposition that is filed is dismissed or withdrawn, the Trademark Trial and Appeal Board shall prepare a notice for the applicant for concurrent use registration and for each applicant, registrant or user specified as a concurrent user in the application. The notices for the specified parties shall state the name and address of the applicant and of the applicant's attorney or other authorized representative, if any, together with the serial number and filing date of the application. ◄ [The procedure shall follow the practice in interference proceedings insofar as it is applicable and the time limitations prescribed in such practice shall be applicable herein.]

(d) ► (1) The notices shall be sent to each applicant, in care of his attorney or other authorized representative, if any, to each user, and to each registrant. A copy

of the application shall be forwarded with the notice to each party specified in the application.

(2) An answer to the notice is not required in the case of an applicant or registrant whose application or registration is specified as a concurrent user in the application, but a statement, if desired, may be filed within forty days after the mailing of the notice; in the case of any other party specified as a concurrent user in the application, an answer must be filed within forty days after the mailing of the notice.

(3) If an answer, when required, is not filed, judgment will be entered precluding the specified user from claiming any right more extensive than that acknowledged in the application(s) for concurrent use registration, but the applicant(s) will remain with the burden of proving entitlement to registration(s). ◄ [When concurrent registration is sought on the basis of a court determination of the rights of the parties to use the marks in commerce, the application shall be examined by the Examiner of Trademarks. If the applicant is entitled to registration subject only to the concurrent lawful use of a party to the court proceeding, the Examiner of Trademark may publish or allow the application, provided the court decree specifies the rights of the parties.]

► (e) The applicant for a concurrent use registration has the burden of proving entitlement thereto. If there are two or more applications for concurrent use registration involved in a proceeding, the party whose application has the latest filing date is the junior party. A party whose application has a filing date between the filing dates of the earliest involved application and the latest involved application is a junior party to every party whose involved application has an earlier filing date. If any applications have the same filing date, the application with the latest date of execution will be deemed to have the latest filing date and that applicant will be the junior party. A person specified as an excepted user in a concurrent use application but who has not filed an application shall be considered a party senior to every party that has an application involved in the proceeding. ◄

► (f) When a concurrent use registration is sought on the basis of a court's determination of the rights of the parties to use the marks in commerce, a concurrent use registration proceeding will not be instituted if all of the following conditions are fulfilled:

(1) The applicant is entitled to registration subject only to the concurrent lawful use of a party to the court proceeding; and

(2) The court decree specifies the rights of the parties; and

(3) A true copy of the court decree is submitted to the examiner; and

(4) The concurrent use application complies fully and exactly with the court decree; and

(5) The excepted use specified in the concurrent use application does not involve a registration.

If any of the conditions specified in this subsection is not satisfied, a concurrent use registration proceeding shall be prepared and instituted as provided in subsections (a) through (e).◄

► (g) Registrations and applications to register on the Supplemental Register and registrations under the Act of 1920 are not subject to concurrent use registration proceedings. ◄

15. Section 2.101 is proposed to be revised to read as follows:

§2.101 ► Extension of time for filing ◄ [Filing] an opposition.

(a) Any person who believes that he would be damaged by the registration of a mark ► on ◄ [upon] the Principal Register may ► file a written request to extend the time for filing an opposition. The written request may be signed by the potential opposer or by an attorney at law or other person authorized to represent a party. ◄ [oppose the same by filing an opposition in the Patent and Trademark Office within thirty days after publication of the mark sought to be registered (§2.80), or within an extension of the time for filing an opposition (§2.102). The opposition must be verified, or include a declaration in accordance with §2.20, unless the opposition as filed by an attorney at law or other authorized representative in accordance with §2.108.]

(b) ► The written request to extend the time for filing an opposition must identify the potential opposer with reasonable certainty. Any opposition filed during an extension of time should be in the name of the person to whom the extension was granted, but an opposition may be accepted if the person in whose name the extension was requested was misidentified through mistake or if the opposition is filed in the name of a person in privity with the person who requested and was granted the extension of time. ◄ [An opposition must include the required fee for each class sought to be opposed in the application. If fees insufficient to cover all classes in the application are submitted, the particular class or classes in which opposition is sought should be specified. If persons are joined in an opposition, a fee for each class sought to be opposed in the application for each person so joined is required.]

(c) ► A written request to extend the time for filing an opposition must be filed in the Patent and Trademark Office before the expiration of thirty days from the date of publication or within any extension of time previously granted under this section, should specify the period of extension desired, and should be addressed to the Trademark Trial and Appeal Board. A first extension of time for not more than thirty days will be granted upon request. Further extensions of time may be granted by the Board for good cause. Extensions of time to file an opposition aggregating more than 120 days from the date of publication of the application will not be granted except upon written stipulation signed by the applicant and the potential opposer, or their authorized representatives, or upon a showing of extraordinary circumstances. ◄ [If no fee, or a fee insufficient to cover at least one class, is filed within 30 days after publication of the mark to be opposed or within an extension of the time for filing an opposition, the opposition will not be refused if the required fee(s) and service charge (see §2.6(g)) are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office. In situations covered by this paragraph, §2.85(e) may not be utilized.]

► (d) Every request to extend the time for filing a notice of opposition should be submitted in triplicate (original plus two copies).◄

16. Section 2.102 is proposed to be revised to read as follows:

§2.102 ► Filing an ◄ [Extension of time for filing] opposition.

(a) ► An opposition proceeding is commenced by the filing of a notice of opposition in the Patent and Trademark Office. ◄ [A request to extend the time for filing an opposition must be made by a person who believes that he would be damaged by the registration of the mark on the Principal Register, but an attorney at law or other person authorized to represent a party may file the request on behalf of a potential opposer. The potential opposer must be identified with reasonable certainty in the request. Any opposition filed during an extension of time should be in the name of the person to whom the extension was granted, but an opposition may be accepted if the person to whom the extension was granted was misidentified through mistake, or an opposition filed in a different name may be accepted if the person filing the opposition is in privity with the person to whom the extension was granted.]

(b) ► Any person who believes that he would be damaged by the registration of a mark on the Principal Register may oppose the same by filing a notice of opposition, which should be addressed to the Trademark Trial and Appeal Board. ◄ [A written request to extend the time for filing an opposition must be received in the Patent and Trademark Office before the expiration of

thirty days from the date of publication, and should specify the period of extension desired. A first extension of time will be granted upon request if the extension is for not more than thirty days. Other extensions of time may be granted by the Commissioner for good cause.]

► (c) The notice of opposition must be filed within thirty days after publication (§2.80) of the application being opposed or within an extension of time (§2.101) for filing an opposition.◄

► (d) The notice of opposition must be verified by oath or affirmation or by a declaration in accordance with §2.20◄

► (e)(1) The notice of opposition must be accompanied by the required fee for each class in the application for which registration is opposed (see §2.85(e)). If the fees submitted are insufficient for an opposition against all of the classes in the application, the particular class or classes against which the opposition is filed should be specified. If the class or classes are not specified, the opposition will be presumed to be against the class or classes in ascending order, beginning with the class having the lowest number, and including the number of classes in the application for which the fees submitted are sufficient to pay the fee due for each class.

(2) If persons are joined as party opposers, a fee is required for each person for each class for which registration is opposed. If the fees submitted are insufficient for each named party opposer, the first named party will be presumed to be the party opposer and additional parties will be deemed to be party opposers to the extent that the fees submitted are sufficient to pay the fee due for each party opposer. If persons are joined as parties opposer against the registration of a mark in more than one class and the fees submitted are insufficient, the fees submitted will be applied first on behalf of the first named opposer against as many of the classes in the application as the submitted fees are sufficient to pay, and any excess will be applied on behalf of the second named party to the opposition against the classes in the application in ascending order. The payment of fees for parties opposer in excess of one may be made as though they are the payment of fees for additional classes in accordance with §2.85(e) subject to the exception that §2.85(e) may not be utilized after a service charge is paid pursuant to §2.6(g).◄

► (f) If no fee, or a fee insufficent to pay for one person to oppose the registration of a mark in at least one class, is submitted within thirty days after publication of the mark to be opposed or within an extension of time for filing an opposition, the opposition will not be refused if the required fee(s) and service charge (see §2.6 (g)) are submitted to the Patent and Trademark Office within the time limit set in the notification of this defect by the Office. In situations covered by this subsection, §2.85(e) may not be utilized. Only one service charge need be paid by each party opposer regardless of the number of classes for which registration is opposed.◄

17. Section 2.103 is proposed to be revised to read as follows:

§2.103 Opposition filed by attorney at law or other authorized representative.

► A notice of ◄ [An] opposition may be filed in the Patent and Trademark Office by an attorney at law or other person authorized to represent a party, either within thirty days after publication of the mark sought to be registered (§2.80) [,] or within an extension of the time for filing an opposition [§ ► 2.101 ◄ [2.102]), but the opposition will be null and void unless ► verified ◄ [confirmed] by the opposer by ► oath or affirmation ◄ [verification,] or by ► a ◄ declaration in accordance with §2.20 [,] within thirty days after the filing of the ► notice of ◄ opposition [,] or within such further time as may be fixed by the Commissioner upon request made before the expiration of the thirty days.

18. Section 2.104 is proposed to be revised to read as follows:

§2.104 Contents of ► notice of ◄ opposition.

The ► notice of ◄ opposition must set forth a short and plain statement showing how the opposer would be damaged by the registration of the opposed mark and state the grounds for opposition. A duplicate copy of the ► notice of ◄ opposition, including exhibits ► ,◄ shall be filed ► with the notice of opposition ◄ .

19. Section 2.105 is proposed to be revised to read as follows:

§2.105 Notification of opposition proceeding[s].

► When a notice of opposition in proper form has been filed and the correct fee(s) (and service charge(s), if any) have been submitted, a notification shall be prepared by the Trademark Trial and Appeal Board, which shall identify the title and number of the proceeding and the application involved and shall designate a time, not less than thirty days from the mailing date of the notification, within which an answer must be filed. A copy of the notification shall be forwarded to the attorney or other authorized representative of the opposer, if any, or to the opposer. The duplicate copy of the notice of opposition and exhibits shall be forwarded with a copy of the notification to the attorney or other authorized representative of the applicant, if any, or to the applicant. ◄ [A notification of an opposition which has been regularly filed shall be prepared, identifying the title and number of the proceeding and the application involved, and designating a time, not less than thirty days from the mailing date of such notification, within which answer must be filed. Copies of this notification shall be forwarded by the Trademark Trial and Appeal Board to the parties in care of their attorney or other representatives, if they have attorneys or other representatives of record. The duplicate copy of the opposition and exhibits shall be forwarded with the notification to the applicant.]

20. Section 2.106 is proposed to be amended by revising paragraph (c) to read as follows:

§2.106 Answer.

* * * * *

(c) The opposition may be withdrawn without prejudice before the answer is filed. After the answer is filed ► , ◄ the opposition may not be withdrawn without prejudice except with the ► written ◄ consent of the applicant.

21. Section 2.107 is proposed to be revised to read as follows:

§2.107 Amendment of ► pleadings in an ◄ opposition ► proceeding ◄ .

► Pleadings in an ◄ [An] opposition ► proceeding ◄ may be amended in the same manner and to the same extent as [a complaint] in a civil action ► in ◄ [before] a United States district court. [See Rule 15 of the Federal Rules of Civil Procedure.]

22. Section 2.111 is proposed to be revised to read as follows:

§2.111 ► Filing ◄ [Time for filing] petition for cancellation.

► (a) A cancellation proceeding is commenced by the filing of a petition for cancellation, together with at least the fee for petitioning to cancel one class, in the Patent and Trademark Office. ◄ [Any person who believes that he is or will be damaged by a registration may, upon payment of the required fee for each class sought to be cancelled in the registration, apply to the Commissioner to cancel said registration as to the specified class or classes. A petition to cancel which includes insufficient fees to cover all classes in the registration should specify the particular class or classes or which cancellation is sought. Such petition may be made at any time in the case of registrations on the Supplemental Register or under the Act of 1920, or registrations under

the Act of 1881 or the Act of 1905 which have not been published under section 12(c) of the Act (§2.153), and in cases involving the grounds specified in section 14(c), (d) and (e) of the Act. In all other cases such petition must be made within five years from the date of registration of the mark under the Act of 1946 or from the date of publication under section 12(c) of the Act.]

► (b) Any person who believes that he is or will be damaged by a registration may file a petition, which should be addressed to the Trademark Trial and Appeal Board, to cancel the registration in its entirety or for each class in the registration specified in the petition. The petition may be filed at any time in the case of registrations on the Supplemental Register or under the Act of 1920, or registrations under the Act of 1881 or the Act of 1905 which have not been published under §12(c) of the Trademark Act of 1946, or on any ground specified in §14(c) or (e) of the Trademark Act of 1946. In all other cases the petition must be filed within five years from the date of registration of the mark under the Trademark Act of 1946 or from the date of publication under 12(c) of the Trademark Act of 1946. ◄

► (c) The petition must be verified by oath or affirmation or by declaration in accordance with §2.20.◄

► (d)(1) The petition must be accompanied by the required fee for each class in the registration for which cancellation is sought (see §2.85(e)). If the fees submitted are insufficient for a cancellation against all of the classes in the registration, the particular class or classes against which the cancellation is filed should be specified. If the class or classes are not specified, the cancellation will be presumed to be against the class or classes in ascending order, beginning with the lowest numbered class, and including the number of classes in the registration for which the fees submitted are sufficient to pay the fee due for each class.

((2) If persons are joined as party petitioners, each must submit a fee for each class for which cancellation is sought. If the fees submitted are insufficient for each named party petitioner, the first named party will be presumed to be the party petitioner and additional parties will be deemed to be party petitioners to the extent that the fees submitted are sufficient to pay the fee due for each party petitioner. If persons are joined as party petitioners against a registration sought to be cancelled in more than one class and the fees submitted are insufficient, the fees submitted will be applied first on behalf of the first-named petitioner against as many of the classes in the registration as the submitted fees are sufficient to pay, and any excess will be applied on behalf of the second-named party to the petition against the classes in the registration in ascending order. The payment of fees for additional party petitioners may be made as though they are the payment of additional fees for additional classes in accordance with §2.85(e).◄

23. Section 2.112 is proposed to be revised to read as follows:

§2.112 ► Contents of petition ◄ [Petition] for cancellation.

► (a) ◄ The petition to cancel [which must be verified, or include a declaration in accordance with §2.20], must set forth a short and plain statement showing how the petitioner is or will be damaged by the registration, state the grounds for cancellation, and indicate the respondent party to whom notification shall be sent. A duplicate copy of the petition, including exhibits, shall be filed with the petition. [Applications to cancel different registrations owned by the same party may be joined in one petition when appropriate, but the required fee must be included for each class sought to be cancelled in each registration against which each application to cancel is filed. If persons are joined in a petition to cancel, a fee for each class sought to be cancelled for each person so joined is required.]

► (b) Petitions to cancel different registrations owned by the same party may be joined in a consolidated petition when appropriate, but the required fee must be included for each party joined as petitioner for each class sought to be cancelled in each registration against which the petition to cancel is filed.◄

24. Section 2.113 is proposed to be revised to read as follows:

§2.113 Notification of ► cancellation proceeding ◄ [filing of petition].

[(a)] When a petition for cancellation ► has been filed in proper form and the correct fees(s) have been submitted, a notification shall be prepared by the Trademark Trial and Appeal Board, which shall identify the title and number of the proceeding and the registration or registrations involved and shall designate a time, not less than thirty days from the mailing date of the notification, within which an answer must be filed. A copy of the notification shall be forwarded to the attorney or other authorized representative of the petitioner, if any, or to the petitioner. The duplicate copy of the petition for cancellation and exhibits shall be forwarded with a copy of the notification to the respondent.◄ [is filed, it shall be transmitted to the Trademark Trial and Appeal Board, which shall make examination thereof to determine if it is formally correct.] If the petition is found to be defective as to form, the party filing the ► petition ◄ [same] shall be so advised and allowed a reasonable time for correcting the informality.

[(b) When the petition is correct as to form, a notification shall be prepared, identifying the title and number of the proceeding and the registration involved, and designating a time, not less than thirty days from the mailing date of such notification, within which answer must be filed. A copy of this notification shall be forwarded to the petitioner in care of his attorney or other representative, if he has an attorney or other representative of record. The duplicate copy of the petition and exhibits shall be forwared with a copy of such notification to the respondent party.]

25. Section 2.115 is proposed to be revised to read as follows:

§2.115 Amendment of ► pleadings in a ◄ [petition for] cancellation ► proceeding ◄ .

►Pleadings in a ◄ [A petition for] cancellation ► proceeding ◄ may be amended in the same manner and to the same extent as [a complaint] in a civil action ► in ◄ [before] a United States district court. [See Rule 15 of the Federal Rules of Civil Procedure.]

26. Section 2.116 is proposed to be amended by revising paragraphs (b) and (c) to read as follows:

§2.116 [Federal] Rules of [Civil] Procedure.

* * * * *

(b) ► The opposer in an opposition proceeding or the petitioner in a cancellation proceeding shall be in the position of plaintiff, and the applicant in an opposition proceeding or the respondent in a cancellation proceeding shall be in the position of defendant. A party that is a junior party in an interference proceeding or in a concurrent use registration proceeding shall be in the position of plaintiff against every party that is senior, and the party that is a senior party in an interference proceeding or in a concurrent use registration proceeding shall be a defendant against every party that is junior. ◄ [The party having the latest filing date in an interference, the opposer in an opposition proceeding, the petitioner in a cancellation proceeding, and the applicant to register as a concurrent lawful user (or such applicant having the latest filing date), shall be deemed to be in the position of plaintiff, and the other parties to such proceedings shall be deemed to be in the position of defendants.]

(c) The ► notice of ◄ opposition ► or ◄ [and] the petition ► for cancellation ◄ [to cancel,] and the ► answer ◄ [answer thereto] correspond to ► the ◄ complaint and answer in ► a ◄ court proceeding[s]. [Such pleadings as may be filed in interference and concurrent

registration proceedings will be treated as complaints or affirmative defenses, depending upon the party filing, but the filing of a pleading in such proceedings shall not operate to change the position of the parties as set forth in the preceding paragraph.]

* * * * *

27. Section 2.117 is proposed to be amended by designating the present section as subsection (a) and adding new subsections (b), (c) and (d), to read as follows:

§2.117 Suspension of proceedings.

* * * * *

► (b) Issue must be joined in the civil action and in the proceeding pending before the Trademark Trial and Appeal Board before the question of suspension of proceedings will be considered. ◄

► (c) Whenever there is pending, at the time when the question of the suspension of proceedings is raised, a motion which is potentially dispositive of the case, the motion will be decided before the question of suspension will be considered. ◄

► (d) Proceedings may also be suspended, for good cause, upon motion or a stipulation of the parties approved by the Board. ◄

28. Section 2.120 is proposed to be revised to read as follows:

§2.120 Discovery [procedure].

► (a) *In general.* ◄ The provisions of the Federal Rules of Civil Procedure relating to discovery shall apply in ► opposition, cancellation, interference and concurrent use registration proceedings ◄ [in inter partes trademark cases] except as otherwise provided in this section. The Trademark Trial and Appeal Board will specify the closing date for the taking of discovery.

► (b) *Discovery deposition within the United States.* ◄ [(a) *Depositions for discovery—(1) Procedure.*] The deposition of a ► natural ◄ person shall be taken in the Federal judicial district where ► the person ◄ [he] resides or is regularly employed ► or at any place on which the parties agree by stipulation ◄ . The responsibility ► rest wholly with the party taking discovery to secure ◄ [for securing] the attendence of a proposed deponent [,] other than a party or anyone who ► , ◄ at the time set for the taking of the deposition ► , is ◄ [was] an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) of Rule 31(a) of the Federal Rules of Civil Procedure ► .◄ [to testify on behalf of a party, rests wholly with the interested party] See 35 U.S.C. 24.

► (c) ◄ (2) *Discovery ► disposition ◄ in foreign countries.* ► (1) ◄ The discovery deposition of a ► natural person residing in a foreign country who is a ◄ party or ► who, at the time set for the taking of the deposition is ◄ an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or ► Rule ◄ 31(a) of the Federal Rules of ► Civil ◄ Procedure ► , shall if taken in a foreign country, ◄ [to testify on behalf of a party, domiciled in a foreign country may] be taken in the manner prescribed by §2.124 [.]

► unless the Trademark Trial and Appeal Board, upon motion for good cause, orders or the parties stipulate, that the deposition be taken by oral examination.

(2) Whenever a foreign party is or will be, during a time set for discovery, present within the United States or any territory which is under the control and jurisdiction of the United States, such party may be deposed by oral examination upon notice by the party seeking discovery. Whenever a foreign party has or will have, during a time set for discovery, an officer, director, managing agent, or other person who consents to testify on its behalf, present within the United States or any territory which is under the control and jurisdiction of the United States, such officer, director, managing agent, or other person who consents to testify in its behalf may be deposed by oral examination upon notice by the party seeking discovery. The party seeking discovery may have one or more officers, directors, managing agents or other persons who consent to testify on behalf of the adverse party, designated under Rule 39(b)(6) of the Federal Rules of Civil Procedure. The deposition of a person under this paragraph shall be taken in the Federal judicial district where the witness resides or is regularly employed, or, if the witness neither resides nor is regularly employed in a Federal judicial district, where the witness is at the time of the deposition. This paragraph does not preclude the taking of a discovery deposition of a foreign party by any other procedure provided by paragraph (1). ◄ [(3) *Use of discovery depositions.* A discovery deposition shall not be considered as part of the record in the case unless the party offering the deposition, or any part thereof, files the same before the close of his testimony period (testimony-in-chief or rebuttal as appropriate) and also files a notice of reliance thereon. A discovery deposition should not be filed in the Patent and Trademark Office in the absence of a notice of reliance. Objections, including any made during the examination, will be considered only if made or renewed at the hearing.]

► (d) *Request for production.* The production of documents and things under the provisions of Rule 34 of the Federal Rules of Civil Procedure will be made at the place where the documents and things are usually kept, or where the parties agree, or where and in the manner which the Trademark Trial and Appeal Board, upon motion, orders. ◄ [(b) *Use of admission or answer to interrogatory.* No admission or answer to an interrogatory shall be considered as part of the record in the case unless the party propounding the request for admission or interrogatory files, before the close of his testimony period (testimony-in-chief or rebuttal, as appropriate), a copy of the admission and the request therefor and/or a copy of the interrogatory and its answer and also files a notice of reliance thereon.]

► (e) *Motion for an order to compel discovery.* If a party fails to designate a person pursuant to Rule 30(b)(6) or Rule 31(a) of the Federal Rules of Civil Procedure, or if a party, or such designated person, or an officer, director or managing agent of a party fails to attend a deposition or fails to answer any question propounded in a discovery deposition, or any interrogatory, or fails to produce and permit the inspection and copying of any document or thing, the party seeking discovery may file a motion before the Trademark Trial and Appeal Board for an order to compel a designation, or attendance at a deposition, or an answer, or production and an opportunity to inspect and copy. The motion shall include a copy of the request for designation or of the relevant portion of the discovery deposition; or a copy of the interrogatory with any answer or objection that was made; or a copy of the request for production, any proffer of production or objection to production in response to the request, and a list and brief description of the documents or things that were not produced for inspection and copying. The motion must be supported by a written statement from the moving party that such party or the attorney therefor has made a good faith effort, by conference or correspondence, to resolve with the other party or the attorney therefor the issues presented in the motion and has been unable to reach agreement. If issues raised in the motion are subsequently resolved by agreement of the parties, the moving party should inform the Board in writing of the issues in the motion which no longer require adjudication. ◄ [(c) *Failure to make discovery: Sanctions.* (1) If any party fails or refuses to answer any proper question in taking discovery depositions or fails or refuses to answer any proper question propounded by interrogatories or fails or refuses to comply with a request to produce and permit the inspection and copying of designated things, the party seeking discovery may file a motion with the Trademark Trial and Appeal Board for an order compelling discovery. Such a motion must be supported by a written statement by the attorney for the moving party that the moving party or its attorney has conferred with the opposing party or

its attorney in an effort in good faith to resolve by agreement the issues raised by the motion and has been unable to reach agreement. If issues raised by the motion are subsequently resolved between the parties, the attorney for the moving party should advise the Trademark Trial and Appeal Board in writing of the matters in the motion which no longer require decision by the Board.

(2) If a party or an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure to testify on behalf of a party, fails to obey an order to provide or permit discovery, the Trademark Trial and Appeal Board may strike out all or any part of any pleading of that party, dismiss the action or proceeding, or deny any part thereof, enter judgment as by default against that party or take any such other action as may be deemed appropriate.]

► (f) *Motion for a protective order.* Upon motion by a party from whom discovery is sought, and for good cause, the Trademark Trial and Appeal Board may make any order which justice requires to protect a party from annoyance, embarrassment, oppression, or undue burden or expense, including one or more of the types of orders provided by clauses (1) through (8), inclusive of Rule 26(c) of the Federal Rules of Civil Procedure. If the motion for a protective order is denied in whole or in part, the Board may, on such conditions (other than an award of expenses to the party prevailing on the motion) as are just, order that any party provide or permit discovery.◄

►(g) *Failure to comply with order.* If a party fails to comply with an order of the Trademark Trial and Appeal Board relating to discovery, including a protective order, the Board may make any appropriate order, including any of the orders provided in Rule 37(b)(2) of the Federal Rules of Civil Procedure, except that the Board does not have authority to hold any person in contempt or to award any expenses to any party. The Board may impose against a party any of the sanctions provided by this subsection in the event that said party or any attorney agent, or designated witness of that party fails to comply with a protective order made pursuant to Rule 26(c) of the Federal Rules of Civil Procedure.◄

► (h) *Request for admissions.* Requests for admissions shall be governed by Rule 36 of the Federal Rules of Civil Procedure except that the Trademark Trial and Appeal Board does not have authority to award any expenses to any party. A motion by a party to determine the sufficiency of an answer or objection to a request made by that party for an admission shall include a copy of the request for admission and any exhibits thereto and of the answer or objection. The motion must be supported by a written statement from the moving party that such party or the attorney therefor has made a good faith effort, by conference or correspondence, to resolve with the other party or the attorney therefor the issues presented in the motion and has been unable to reach agreement. If issues raised in the motion are subsequently resolved by agreement of the parties, the moving party should inform the Board in writing of the issues in the motion which no longer require adjudication.◄

► (i) *Pre-trial conference.* Whenever it appears to the Trademark Trial and Appeal Board that questions or issues arising during the interlocutory phase of an inter partes proceeding have become so complex that their resolution by correspondence or telephone conference is not practical and that resolution would be likely to be facilitated by a conference in person of the parties or their attorneys with a Member or Attorney-Examiner of the Board, the Board may at its discretion request that the parties or their attorneys, under circumstances which will not result in undue hardship for any party, meet with the Board at its offices for a pre-trial conference.◄

► (j) *Use of discovery deposition, admission, or answer to interrogatory.* (1) A party who took a discovery deposition, or who obtained an answer to an interrogatory, or who obtained an admission, may make the same of record in the case by filing the deposition or any part thereof with any exhibit identified in the part that is filed, or a copy of the interrogatory and the answer thereto with any exhibit made part of the answer, or a copy of the request for admission and any exhibit thereto and the admission (or a statement that the party from whom an admission was requested failed to respond thereto), together with a notice of reliance. The notice of reliance and the material submitted thereunder shall be filed during the testimony period of the party who files the notice of reliance. An objection made at a discovery deposition by a party answering a question subject to the objection will be considered at final hearing.

(2) A discovery deposition or part thereof, or an answer to an interrogatory, or an admission, may be submitted and made part of the record by only the inquiring party except that, if only part of a discovery deposition, or fewer than all of the answers to interrogatories, or fewer than all of the admissions, are offered in evidence by the inquiring party, the responding party may introduce under a notice of reliance any other part of the discovery deposition, or any other answers to interrogatories, or any other admissions, which should in fairness be considered so as to make not misleading what was offered by the inquiring party.

(3) A deposition, taken during the discovery period, of a person who is not a party, or an officer, director or managing agent of a party, or a person designated by a party pursuant to Rule 30(b)(6) or Rule 31(a) of the Federal Rules of Civil Procedure, shall not be offered in evidence except when the person whose discovery deposition was taken is, during the testimony period of the party offering the deposition: dead; or out of the United States (unless it appears that the absence of the witness was procured by the party offering the deposition); or unable to testify because of age, illness, infirmity, or imprisonment; or cannot be served with a subpoena to compel attendance at a testimonial deposition; or there is a stipulation by the parties; or upon a showing of extraordinary circumstances and necessity in the interest of justice. The use of a discovery deposition under this paragraph will be allowed only by order of the Trademark Trial and Appear Board on motion, which shall be filed promptly after the circumstances claimed to justify use of the deposition become known, or by stipulation of the parties approved by the Board.

(4) Subsection (1) will not be interpreted to preclude the reading or the use of a discovery deposition, or answer to an interrogatory, or admission as part of the examination or cross-examination of any witness during the testimony period of any party.

(5) Interrogatories, requests for production, requests for admissions, and materials or depositions obtained during the discovery period should not be filed with the Board except when submitted with a motion to compel discovery, or in support of or response to a motion for summary judgment, or under a notice of reliance during a party's testimony period.◄

29. Section 2.171 is proposed to be revised to read as follows:

§2.121 Assignment of times for taking testimony.

(a) ► (1) The Trademark Trial and Appeal Board will issue a trial order assigning to each party the time for taking testimony. No◄ [Times will be assigned for the taking of testimony in behalf of each of the parties, and no] testimony shall be taken except during the time assigned►, unless by stipulation of the parties approved by the Board or, upon motion, by order of the Board. Testimony periods may be rescheduled by stipulation of the parties approved by the Board or, upon motion, by order of the Board. The resetting of the closing date for discovery will result in the rescheduling of the testimony periods without action by any party.

(2) The initial trial order will be mailed by the Board after issue is joined.◄ [If there be no more than two parties to an interference, the times for taking testimony will be so arranged that each shall have an opportunity to prove his case against prior parties, to rebut their evidence, and to meet the evidence of junior parties.]

(b) ► (1) The Trademark Trial and Appeal will schedule a testimony period for the plaintiff to present its case in chief, a testimony period for the defendant to present its case and to meet the case of the plaintiff, and a testimony period for the plaintiff, and testimony period for the plaintiff to present evidence in rebuttal.

(2) When there is a counterclaim, or when proceedings have been consolidated and one party is in the position of plaintiff in one of the involved proceedings and in the position of defendant in another of the involved proceedings, or when there is an interference or a concurrent use registration proceeding involving more than two parties, the Board will schedule testimony periods so that each party in the position of plaintiff will have a period for presenting its case in chief against each party in the position of defendant, each party in the position of defendant will have a period for presenting its case and meeting the case of each plaintiff, and each party in the position of plaintiff will have a period for representing evidence in rebuttal. ◄ [The times will ordinarily be assigned in the notices sent by the Patent and Trademark Office in interferences and in concurrent use proceedings, and in a notice sent after the answers have been filed in cases of opposition and cancellation.]

► (c) A testimony period which is solely for rebuttal will be set for thirty days. The periods may be extended by stipulation of the parties, approved by the Trademark Trial and Appeal Board, or, upon motion, by order of the Board. ◄

► (d) When parties stipulate to the rescheduling of testimony periods or to the rescheduling of the closing date for discovery and the rescheduling of testimony periods, a stipulation presented in the form used in a trial order, signed by the parties, or a motion in said form signed by one party and including a statement that every other party has agreed thereto, and submitted in one original plus as many photocopies as there are parties, will, if approved, be so stamped, signed, and dated, and the copies will be promptly returned to the parties. ◄

30. Section 2.122 is proposed to be revised to read as follows:

§2.122 Matters in evidence.

(a) ► The rules of evidence for proceedings before the Trademark Trial and Appeal Board are the Federal Rules of Evidence, the relevant provisions of the Federal Rules of Civil Procedure, the relevant provisions of Title 28 of the United States Code, and the provisions of this Part of Title 37 of the Code of Federal Regulations. ◄ [The files of the applications or registrations specified in the declaration of interference or in the notice in case of concurrent registration proceedings, of the application against which an opposition is filed, and of the registration against which a petition for cancellation or an affirmative defense requesting]

► (b)(1) The file of each application specified in a declaration of interference, of each application or registration specified in the notice of a concurrent use registration proceeding, of the application against which a notice of opposition is filed, or of each registration against which a petition or counterclaim for ◄ cancellation is filed [,] ► forms ◄ [form] part of the record of the proceeding without any action by the parties ► and reference may be made to the file ◄ [, and may be referred to] for any relevant and competent purpose.

► (2) The allegation in an application for registration, or in a registration, of a date of use is not evidence on behalf of the applicant or registrant; a date of use of a mark must be established by evidence. Specimens in the file of an application for registration, or in the file of a registration, are not evidence on behalf of the applicant or registrant unless identified and introduced in evidence as are other exhibits during the period for the taking of testimony.

(3) An exhibit attached to a pleading is not evidence on behalf of the party to whose pleading the exhibit is attached unless identified and introduced in evidence as are other exhibits during the period for the taking of testimony. ◄ [(b) A registration of the opposer or petitioner pleaded in an opposition or petition to cancel will be received in evidence and made part of the record if two copies showing status and title of the printed registration or an order for such copies accompany the opposition or petition.]

(c) ► (1) ◄ Printed publications, such as books and periodicals, available to the general public in libraries or of general circulation ► among members of the public or that segment of the public which is relevant under an issue in a proceeding ◄ , and official records, if ► the publication or official record is ◄ competent evidence and ► relevant ◄ [pertinent] to ► an ◄ [the] issue, may be introduced in evidence by filing [in the Patent and Trademark Office] a notice ► of reliance on the material being offered, which notice shall specify the printed publication or the official record and the pages to be read, indicate generally the relevance of the material being offered, and be accompanied by the official record or a copy thereof whose authenticity is established under the Federal Rules of Evidence, or by the printed publication or a copy of the relevant portion thereof, including the title page and any other page needed to show the place and date of publication, the name and address of the publisher, and the name of the author or the editor. The notice of reliance shall be filed during the testimony period of the party that files the notice.

(2) A registration owned by any party to a proceeding may be made of record in the proceeding by that party by filing a notice of reliance, which shall be accompanied by a certified copy of the registration prepared and issued by the Patent and Trademark Office showing both the current status of and current title to the registration. For the cost of a certified copy of a registration showing status and title, see the second item under §2.6(a). The notice of reliance shall be filed during the testimony period of the party that files the notice. ◄ [to that effect during the period for the taking of the testimony of the party [during the period for taking of testimony-in-chief if such matters are not in rebuttal), specifying the record or the printed publication, the page or pages to be used, indicating generally, its relevance, and accompanied by the record or authenticated copy or the printed publication or a copy. When a copy of an official record of the Patent and Trademark Office is filed, it need not be a certified copy. The notice and copy of the record or publication must be served on each of the other parties].

(d) ► A copy of an official record of the Patent and Trademark Office other than a copy of a registration owned by a party to a proceeding need not be certified to be offered in evidence. ◄ [Upon motion duly made and granted, testimony taken in another proceeding, or testimony taken in a suit between the same parties or those in interest, may be used in a proceeding, so far as relevant and material, subject, however, to the right of any contesting party to recall or demand the recall of witnesses whose testimony has been taken, and to take other testimony in rebuttal of the testimony.]

► (e) By order of the Trademark Trial and Appeal Board, on motion, testimony taken in another proceeding, or testimony taken in a suit or action in a court, between the same parties or those in privity may be used in a proceeding, so far as relevant and material, subject, however, to the right of any adverse party to recall or demand the recall for examination or cross-examination of any witness whose prior testimony has been offered and to rebut the testimony. ◄

31. Section 2.123 is proposed to be amended by revising paragraphs (a), (e)(3), (j) and (k) to read as follows:

§2.123 Trial testimony in inter partes cases.

(a) (1) The testimony [*Manner of taking testimony.* Testimony] of witnesses in inter partes cases may be taken[:(1)] by depositions upon oral examination as provided by this section [,] or [(2)] by depositions upon written questions as provided by [in accordance with the requirements of this section and] §2.124. If a party serves

notice of the taking of a testimonial deposition upon written questions of a witness who is, or will be at the time of the deposition, present within the United States or any territory which is under the control and jurisdiction of the United States, any adverse party may, within fifteen days from the date of service of the notice, file a motion with the Trademark Trial and Appeal Board, for good cause, for an order that the deposition be taken by oral examination.

(2) A testimonial deposition taken in a foreign country shall be taken by deposition upon written questions as provided by §2.124, unless the Board, upon motion for good cause, orders that the deposition be taken by oral examination, or the parties so stipulate.

* * * * *

(e) *Examination of witnesses*:[.]

* * * * *

(3) Every adverse [The opposing] party shall have full opportunity to cross-examine each witness. [the witnesses.] If the notice of examination of witnesses which is served pursuant to subsection (c) is improper or inadequate with respect to any witness, an adverse party may cross-examine that witness under protest while reserving the right to object to the receipt of the testimony in evidence. Promptly after the testimony is completed, the adverse party, if he wishes to preserve the objection, shall move to strike the testimony from the record, which motion will be decided on the basis of all of the relevant circumstances. A motion to strike the testimony of a witness for lack of proper or adequate notice of examination must request the exclusion of the entire testimony of that witness and not only a part of that testimony. ► [opposing party shall attend the examination of witnesses not named in the notice, and shall either cross-examine such witnesses or fail to object to their examination, he shall be deemed to have waived his right to object to such examination for want of notice.] ◄

* * * * *

(j) *Effect of errors and irregularities in depositions* ►: ◄ [.] Notice will not be taken of merely formal or technical objections which shall not appear to have wrought a substantial injury to the party raising them; and in case of such injury it must be made to appear that, as soon as the party became aware of the ground of objection, he gave notice thereof. Rule 32(d) (1), (2), and (3) ►(A) and (B) ◄ [(a) and (b)] of the Federal Rules of Civil Procedure shall apply to errors and irregularities in depositions.

(k) *Objections to admissibility* ►: ◄ [.] Subject to the provisions of ► subsection ◄ [paragraph] (j) [of this section] , objection may be made to receiving in evidence any deposition ► , ◄ or part thereof, or any other evidence, for any reason which would require the exclusion of the evidence ► from consideration. Objections based on grounds of alleged lack of relevancy, materiality, or competency should be raised in the brief filed under §2.128, but not by a motion to strike testimony regularly taken pursuant to these rules. Objections will be considered at final hearing. ◄ [according to the established rules of evidence, which will be applied strictly by the Office.]

* * * * *

32. Section 2.124 is proposed to be revised to read as follows:

§2.124 ► Depositions ◄ [Testimony by depositions] upon written questions.

(a) ► A deposition upon written questions may be taken before any person before whom depositions may be taken as provided by Rule 28 of the Federal Rules of Civil Procedure. ◄ [A party may take the testimony of a witness by written questions to be propounded by an officer before whom depositions may be taken. See Rule 28 of the Federal Rules of Civil Procedure. The questions shall be served upon the other party within 10 days after the opening date set for taking the testimony of the party submitting the questions, together with a notice stating the name and address of the person who is to answer them and the name or descriptive title and address of the officer before whom the deposition is to be taken. Within 10 days thereafter, a party so served may serve cross questions upon the party proposing to take the deposition. Within 5 days thereafter, the latter may serve redirect questions upon a party who has served cross questions. Within 3 days after being served with redirect questions a party may serve recross questions upon the party proposing to take the depositions. Written objections to questions may be served on the party propounding the questions, and in response thereto substitute questions may be served, within 3 days.]

(b) ► (1) A party desiring to take a testimonial deposition upon written questions shall serve notice thereof upon each adverse party within ten days from the opening date of the testimony period of the party who serves the notice. The notice shall state the name and address of the witness. A copy of the notice, but not copies of the questions, shall be filed with the Trademark Trial and Appeal Board.

(2) A party desiring to take a discovery deposition upon written questions shall serve notice thereof upon each adverse party and shall file a copy of the notice, but not copies of the questions, with the Board. The notice shall state the name and address, if known, of the person whose deposition is to be taken. If the name of the person is not known, a general description sufficient to identify him or the particular class or group to which he belongs shall be stated in the notice, and the party from whom the discovery deposition is to be taken shall designate one or more persons to be deposed in the same manner as is provided by Rule 30(b)(6) of the Federal Rules of Civil Procedure. ◄ [A copy of the notice and copies of all questions served shall be delivered by the party taking the testimony to the officer designated in the notice, who shall proceed to take the testimony of the witness in response to the questions and to prepare each answer immediately preceded by its corresponding question, then certify, and file the deposition, attaching thereto the copy of the notice and the questions received by him. Such depositions are subject to the same rulings for filing and serving copies as other depositions.]

(c) ► Every notice given under the provisions of subsection (b) shall be accompanied by the name or descriptive title of the officer before whom the deposition is to be taken. ◄ [On motion made within ten days after service of the notice and written questions, it may be ordered, for good cause shown, that the testimony be not taken in accordance with the section but by oral examination of the witness.]

(d) ► (1) Every notice served on any adverse party under the provisions of subsection (b) shall be accompanied by the written questions to be propounded on behalf of the party who proposes to take the deposition. Within twenty days from the date of service of the notice, any adverse party may serve cross questions upon the party who proposes to take the deposition; any party who serves cross questions shall also serve every other adverse party. Within ten days from the date of service of the cross questions, the party who proposes to take the deposition may serve redirect questions on every adverse party. Within ten days from the date of service of the redirect questions, any party who served cross questions may serve recross questions upon the party who proposes to take the deposition; any party who serves recross questions shall also serve every other adverse party. Written objections to questions may be served on a party propounding questions; any party who objects shall serve a copy of the objections on every other adverse party. In response to objections, substitute questions may be served on the objecting party within ten days of the date of service of the objections; substitute questions shall be served on every other adverse party.

(2) Upon motion for good cause by any party, or upon its own motion, the Trademark Trial and Appeal Board may extend any of the time periods provided by paragraph (1) of this subsection (d) and may, when one

or more testimonial depositions are to be taken upon written questions, suspend or reschedule other proceedings in the matter to allow for the orderly completion of the depositions upon written questions. ◄ [Testimony in foreign countries shall be taken only be depositions upon written questions unless the parties stipulate otherwise in writing. Rule 28(b) of the Federal Rules of Civil Procedure shall apply to the taking of testimony in foreign countries.]

► (e) Within ten days after the last date when questions, objections, or substitute questions may be served, the party who proposes to take the deposition shall mail a copy of the notice and copies of all the questions to the officer designated in the notice; a copy of the letter to the office shall be served on every adverse party. The officer designated in the notice shall take the testimony of the witness in response to the questions and shall record each answer immediately after the corresponding question. The officer shall then certify the transcript and mail the transcript and exhibits to the party who took the deposition. ◄

►(f) the party who took the deposition shall promptly serve a copy of the transcript, copies of documentary exhibits, and duplicates or photographs of physical exhibits on every adverse party. It is the responsibility of the party who takes the deposition to assure that the transcript is correct. If the deposition is a discovery deposition, it may be made of record as provided by §2.120(j).

If the deposition is a testimonial deposition, the original and one copy, together with copies of documentary exhibits and duplicates or photographs of physical exhibits, shall be filed promptly with the Trademark Trial and Appeal Board. ◄

► (g) Objections to questions and answers in depositions upon written questions may be considered at final hearing. ◄

33. Section 2.125 is proposed to be revised to read as follows:

§2.125 ► Filing and Service ◄ [Copies] of testimony.

(a) One copy of the transcript of testimony [(] taken in accordance with §2.123 [(e) through (h) or §2.124)], together with copies of documentary exhibits ► and duplicates or photographs of physical exhibits ◄ , shall be served on each adverse party within ► thirty ◄ [30] days after completion of the taking of ► that ◄ [such] testimony. [The certified transcript and exhibits and one copy of the transcript shall be filed in the Patent and Trademark Office as promptly as possible.]

(b) ► The party who takes testimony is responsible for having all typographical errors in the transcript and all errors of arrangement, indexing and form of the transcript corrected, on notice to each adverse party, prior to the filing of one certified transcript and one copy of the transcript with the Trademark Trial and Appeal Board. The party who takes testimony is responsible for serving on each adverse party one copy of the corrected transcript or, if reasonably feasible, corrected pages to be inserted into the transcript previously served. ◄ [(b) Each transcript and the copies thereof shall comply with §2.123(g) as to arrangement, indexing and form.]

► (c) One certified transcript and exhibits and one copy of the transcript shall be filed promptly with the Trademark Trial and Appeal Board. Notice of such filing shall be served on each adverse party and a copy of each notice shall be filed with the Board. ◄

► (d) Each transcript and the copies thereof shall comply with §2.123(g) with respect to arrangement, indexing and form. ◄

► (e) Upon motion by any party, for good cause, the Trademark Trial and Appeal Board may order that any part of a deposition transcript or any exhibits that directly disclose any trade secret or other confidential research, development, or commercial information may be filed under seal and kept confidential under the provisions of §2.27(e). If any party or any attorneys or agent of a party fails to comply with an order made under this paragraph, the Board may impose any of the sanctions authorized by §2.120(g). ◄

§2.126 [Removed].

34. It is proposed to remove §2.126. Allegations in application not evidence on behalf of applicant.

35. Section 2.127 is proposed to be revised to read as follows:

§2.127 Motions.

[(a) ► Every motion ◄ [Motions] shall be made in writing ► , ◄ [and] shall contain a full statement of the ► grounds, and shall embody or be accompanied by a brief. ◄ [grounds therefor. Any brief or memorandum in support of a motion shall accompany or be embodied in the motion.] ► A brief in response ◄ [Briefs in opposition] to a motion shall be filed within fifteen days from the date of service of the motion unless another time is specified by the Trademark Trial and Appeals Board or the time is extended ► by order of the Board on motion for good cause. ◄ [on request] ► When ◄ [Where] a party fails to file a brief in ► response ◄ [opposition] to a motion, the Trademark Trial and Appeal] Board may treat the motion as conceded. ► An oral hearing ◄ [Oral hearings] will not be held on ► a motion ◄ [motions] except on order ► by ◄ [of] the [Trademark Trial and Appeal] Board.

(b) Any request for [rehearing or] reconsideration [,] or modification of ► an order or ◄ [a] decision ► issued ◄ [,] on a motion [which is not finally dispositive of the case,] must be filed within thirty days from the date thereof. ► A brief in response must ◄ [Any brief in opposition shall] be filed within fifteen days ► from the date of ◄ [after] service of the request.

(c) Interlocutory motions, requests, and other matters not ► actually or potentially dispositive of a ◄ [finally determinative in the] proceeding may be acted upon by a ► single Member ◄ [member] of the Trademark Trial and Appeal Board ► or by an Attorney-Examiner of the Board to whom authority so to act has been delegated. ◄

► (d) When any party files a motion to dismiss, or a motion for judgment on the pleadings, or a motion for summary judgment, or any other motion which is potentially dispositive of a proceeding, the case will be suspended by the Trademark Trial and Appeal Board with respect to all matters not germane to the motion and no party should file any paper which is not germane to the motion. If the case is not disposed of as a result of the motion, proceedings will be resumed pursuant to an order of the Board when the motion is decided. ◄

36. Section 2.128 is proposed to be amended by revising paragraphs (a) and (b) to read as follows:

§2.128 ► Briefs at final hearing. ◄ [Final hearings and briefs.]

(a) ► (1) ◄ The brief of ► the ◄ [a] party in the position of plaintiff shall be filed not later than sixty days after the [closing] date set for ► the close of ◄ rebuttal testimony ► . The ◄ [; the] brief of ► the ◄ [a] party in the position of defendant ► shall be filed ◄ not later than thirty days after the due date of the first brief ► . A ◄ [; a] reply brief by ► the ◄ [a] party in the position of plaintiff ► may be ◄ [, if] filed ► not later than ◄ [, shall be due] fifteen days after the due date of the ► defendant's ◄ brief [to which it is a reply]. [Three copies of all briefs should be filed.]

► (2) When there is a counterclaim, or when proceedings have been consolidated and one party is in the position of plaintiff in one of the involved proceedings and in the position of defendant in another of the involved proceedings, or when there is an interference or concurrent use registration proceeding involving more than the two parties, the Trademark Trial and Appeal Board will set the due dates for the filing of the main brief, and the answering brief, and the rebuttal brief by the parties.

(3) When a party in the position of plaintiff fails to file a main brief or a party in the position of defendant fails

to file a brief, the Board may treat such failure as a concession of the case. ◄

(b) Briefs shall be submitted in typewritten or printed form, double spaced ►, ◄ on letter or legal size paper. Without leave of the Trademark Trial and Appeal Board, no brief shall contain more than ► fifty ◄ [50] pages of argument and, in the case of a reply brief, the entire brief shall not exceed ► twenty-five ◄ [25] pages. Each brief shall not exceed ► twenty-five ◄ [25] pages. Each brief shall contain an alphabetical index of cases ► cited ◄ therein. ► One original and two legible copies, on good quality paper, of each brief shall be filed. ◄

* * * * *

37. Section 2.129 is proposed to be revised to read as follows:

§2.129 Oral argument[s and] ► ; ◄ reconsideration.

(a) ► If a party desires to have an oral argument at final hearing, the party shall request such argument by a separate notice filed not later than ten days after the due date for the filing of the last reply brief in the proceeding. ◄ Oral arguments will be heard by [at least] three Members of the Trademark Trial and Appeal Board at the time ► specified ◄ [stated] in the notice ► of hearing ◄ . If any party appears at the specified time, ► that party ◄ [he] will be heard. If the Board is prevented from hearing the case at the ► specified time ◄ [time specified,] a new ► hearing date will be set. ◄ [assignment will be made, or the case will be continued from day to day until heard.] Unless otherwise permitted, oral arguments ► in an inter partes case ◄ will be limited to ► thirty minutes ◄ [one-half hour] for each party. ► A party in the position of plaintiff may reserve part of the time allowed for oral argument to present a rebuttal argument. ◄

(b) ► The date of time of a hearing may be reset, so ◄ [Hearings may be advanced or adjourned, as] far as is convenient and proper, to meet the wishes of the parties and their attorneys or other authorized representatives.

(c) Any request for rehearing or reconsideration [,] or modification of a decision ► issued after final hearing ◄ [, including a decision on a motion which is finally dispositive of a case,] must be filed within thirty days from the date ► of the decision ◄ [thereof] . ► A ◄ [Any] brief in ► response must ◄ [opposition shall] be filed within fifteen days ► from the date of ◄ [after] service of the request. The times specified [herein] may be extended by ► order of ◄ the Trademark Trial and Appeal Board ► on motion for good cause ◄ [upon a showing of sufficient cause].

38. Section 2.131 is proposed to be revised to read as follows:

§2.131 ► Remand after decision ◄ [Ex parte matter] in [an] inter partes ► proceeding ◄ [case].

► If, during an inter partes proceeding, facts are disclosed which appear to render the mark of an applicant unregistrable, but such matter has not been tried under the pleadings as filed by the parties or as they might be deemed to be amended under Rule 15 [b] of the Federal Rules of Civil Procedure to conform to the evidence, the Trademark Trial and Appeal Board, in lieu of determining the matter in the decision on the proceeding, may refer the application to the examiner for reexamination in the event the applicant ultimately prevails in the inter partes proceeding. Upon receiving the application, the examiner shall withhold registration pending reexamination of the application in the light of the reference by the Board. ◄ [If, in considering an inter partes case involving an application, facts appear which, in the opinion of the Trademark Trial and Appeal Board, render the mark of the applicant unregistrable on one or more ex parte grounds, the Board shall in its decision on the inter partes issues in the case recommend that if the applicant finally prevails in the case, registration be withheld pending a reexamination by the Examiner to Trademarks of the application in the light of such facts.] If, upon [such] reexamination [following termination of the inter partes case the ► examiner ◄ [Examiner of Trademarks] finally refuses registration to the applicant, an appeal may be taken as provided by §§2.141 and 2.142.

39. Section 2.132 is proposed to be revised to read as follows:

§2.132 ► Involuntary dismissal for failure ◄ [Failure] to take testimony.

(a) ► If the time for taking testimony by any party in the position of plaintiff has expired and that party has not taken testimony or offered any other evidence, any party in the position of defendant may, without waiving the right to offer evidence in the event the motion is denied, more for dismissal on the ground of the failure of the plaintiff to prosecute. The party in the position of plaintiff shall be allowed fifteen days from the date of service of the motion to show cause why judgment should not be rendered against him. In the absence of a showing of good and sufficient cause, judgment may be rendered against the party in the position of plaintiff. If the motion is denied, testimony periods will be reset for the party in the position of defendant and for rebuttal. ◄ [Upon the filing of a statement by any party in the position of defendant, that the time for taking testimony on behalf of any party in the position of plaintiff has expired and that no testimony has been taken by him and no other evidence offered, an order may be entered that such party show cause within a time set therein, not less than ten days, why judgment should not be rendered against him, and in the absence of a showing of good and sufficient cause judgment may be rendered as by default.]

(b) If no evidence other than a copy of copies of Patent and Trademark Office records is offered by ► any ◄ [the] party in the position of plaintiff, any party in the position of defendant ► may ◄ , without waiving the right to offer evidence in the event the motion is denied, [may] move for dismissal on the ground that upon the law and the facts the party in the position of plaintiff has shown no right to relief. The party in the position of plaintiff shall be allowed fifteen days ► from the date of ◄ [after] service of the motion to file ► a brief in response ◄ [his argument in opposition] to the motion. ► The Trademark Trial and Appeal Board may render judgment ◄ [Judgment may be rendered] against the party in the position of plaintiff, or the [Trademark Trial and Appeal] Board may decline to render judgment until all of the evidence is in ► the record ◄ .

► If judgment is not rendered, ◄ [In the latter event,] testimony periods will be reset for the party in ► the ◄ position of defendant and for rebuttal.

► (c) Any motion filed under subsection (a) or (b) must be filed before the opening of the testimony period of the moving party . ◄

40. Section 2.134 is proposed to be revised to read as follows:

§2.134 Surrender or ► voluntary ◄ cancellation of registration.

► (a) After the commencement of a cancellation proceeding, if the respondent ◄ [If a registrant involved in a proceeding] applies ► for cancellation of the involved ◄ [to cancel his] registration under ► § ◄ [section] 7(d) of the ► Trademark ◄ Act without [first obtaining] the written consent [thereto] of ► every ◄ [the] adverse party, judgment shall be entered against ► the respondent ◄ [him].

► (b) After the commencement of a cancellation proceeding, if the respondent permits his involved registration to be cancelled under §8 of the Trademark Act or fails to renew his involved registration under §9 of the Trademark Act, such cancellation or failure to renew shall be deemed to be the equivalent of a cancellation by request of respondent without the consent of the adverse party and shall result in judgment against respondent as provided be subsection (a). ◄

41. Section 2.135 is proposed to be revised to read as follows:

§2.135 Abandonment of application or mark.

►After the commencement of an opposition proceeding, if the◄ [If, in a proceeding, an] applicant files a written abandonment of the application or of the mark without the ►written◄ consent [thereto] of ►every◄ [the] adverse party, judgment shall be entered against ► the◄ [such] applicant.

42. Section 2.142 is proposed to be revised to read as follows:

§2.142 Time and manner of ex parte appeals.

(a) ►Any◄ [such] appeal ►filed under the provisions of §2.141◄ must be ►filed◄ [taken] within six months from the date of final refusal or [from] the date of the action from which ► the◄ appeal is taken. ►An appeal◄ [Appeal] is taken [simply] by filing a notice of appeal and ►paying◄ [payment of] the appeal fee.

(b) The [appellent's] brief ►of appellant◄ shall be filed within sixty days ►from◄ [after] the date of appeal. If the brief is not filed within the time allowed, the appeal may be dismissed. The examiner ►shall◄ [may], within ►sixty days after the brief of appellant is sent to the examiner◄ [such time as may be directed by the Commissioner], ►filed with the Trademark Trial and Appeal Board◄ [furnish] a written statement ►answering every point in the brief of appellant and shall mail◄ [in answer to appellant's brief, supplying] a copy ►of the statement◄ to the appellant. The appellant may file a reply brief within twenty days from the date of ►mailing of the statement of the examiner◄ [such answer].

(c) ►All requirements made by the examiner and not the subject of appeal shall be complied with prior to the filing of an appeal.◄ [If the appellant desires an oral hearing, he should so state by separate notice filed not later than his brief; and due notice of the time for such hearing will be given. Oral argument will be limited to one-half hour unless otherwise permitted. If no request for oral hearing is made, the appeal will be considered on brief.]

(d) ►The record in the application should be complete prior to the filing of an appeal. The Trademark Trial and Appeal Board will ordinarily not consider additional evidence filed with the Board by the appellant or by the examiner after the appeal is filed. After an appeal is filed, if the appellant or the examiner desires to introduce additional evidence, the appellant or the examiner may request the Board to suspend the appeal and to remand the application for further examination.◄ [Applications which have been considered and decided on appeal will not be reopened except by order of the Commissioner and then only for consideration of matters not already adjudicated, sufficient cause being shown.]

► (e)(1) If the appellant desires an oral hearing, a request therefore should be made by a separate notice filed not later than ten days after the due date for a reply brief. Oral argument will be heard by three Members of the Trademark Trial and Appeal Board at the time specified in the notice of hearing, which may be reset if the Board is prevented from hearing the argument at the specified time, or so far as is convenient and proper, to meet the wish of the appellant or his attorney or other authorized representative.

(2) If the appellant requests an oral argument, the examiner who issued the refusal of registration or the requirement from which the appeal is taken, or in lieu thereof another examiner from the same examining division as designated by the supervisory attorney thereof, shall present an oral argument.

If no request for an oral hearing is made by the appellant, the appeal will be decided on the record, briefs and statement.

(3) Oral argument will be limited to twenty minutes by the appellant and ten minutes by the examiner. The appellant may reserve part of the time allowed for oral argument to present a rebuttal argument.

► (f)(1) If, during an appeal from a refusal of registration, it appears to the Trademark Trial and Appeal Board that an issue not previously raised may render the mark of the appellant unregistrable, the Board may suspend the appeal and remand the application to the examiner for further examination within thirty days.

(2) If the further examination does not result in an additional ground for refusal or registration, the examiner shall promptly return the application to the Board, for resumption of the appeal, with a written statement that further examination did not result in an additional ground for refusal of registration.

(3) If the further examination does result in an additional ground for refusal of registration, the examiner and appellant shall proceed as provided by §§2.61, 2.62, 2.63, and 2.64. If the ground for refusal of registration is made final, the examiner shall return the application to the Board, which shall thereupon issue an order allowing the appellant sixty days from the date of the order to file a supplemental brief limited to the additional ground for the refusal of registration. If the supplemental brief is not filed by the appellant within the time allowed, the appeal may be dismissed.

(4) If the supplemental brief of the appellant is filed, the examiner shall, within sixty days after the supplemental brief of the appellant is sent to the examiner, file with the Board a written statement answering every point in the supplemental brief of appellant and shall mail a copy of the statement to the appellant. The appellant may file a reply brief within twenty days from the date of mailing of the statement of the examiner.

(5) If an oral hearing on the appeal had been requested prior to the remand of the application but not yet held, an oral hearing will be set and heard as provided in subsection (e). If an oral hearing had been held prior to the remand or had not been previously requested by the appellant, an oral hearing may be requested by the appellant by a separate notice filed not later than ten days after the due date for a reply brief on the additional ground for refusal of registration. If the appellant files a request for an oral hearing, one will be set and heard as provided in subsection (e).◄

► (g) An application which has been considered and decided on appeal will not be reopened except for the entry of a disclaimer under §6 of the Trademark Act or upon order of the Commissioner, but a petition to the Commissioner to reopen an application will be considered only upon a showing of sufficient cause for consideration of any matter not already adjudicated.◄

43. Section 2.146 is proposed to be revised to read as follows:

§2.146 ►Petitions◄ [Petition] to the Commissioner.

(a) Petition may be taken to the Commissioner:

(1) From any repeated ► or final formal◄ [action or] requirement of the ►examiner◄ [Examiner of Trademarks, not subject to appeal under §2.141,] in the ex parte prosecution of an application ►if permitted by §2.63(b)◄ :

(2) IN ►any case for◄ [cases in] which the► Trademark Act, or title 35 of the United States Code, or this Part of Title 37 of the Code of Federal Regulations specifies◄ [statute or the rules specify] that the matter is to be determined directly [by] or reviewed by the Commissioner; [and]

(3) To invoke the supervisory authority of the Commissioner in appropriate circumstances ►;◄ [.]

► (4) In any case not specifically defined and provided for by this Part of Title 37 of the Code of Federal Regulations;

(5) In an extraordinary situation, when justice requires and no other party is injured thereby, to request a suspension or waiver of any requirement of the rules not being a requirement of the Trademark Act.◄

(b) ►Questions arising under §§2, 3, 4, 5, 6 and 23 of the Trademark Act during the ex parte prosecution of applications are not considered to be appropriate subject matter for petitions to the Commissioner.◄ [Any such

petition must contain a statement of the facts involved and the point or points to be reviewed and the action requested. Any brief in support thereof should accompany or be embodied in the petition; in contested cases any brief in opposition shall be filed within fifteen days after service of the petition. Where facts are to be proved in ex parte cases (as in a petition to revive an abandoned application), the proof in the form of affidavits or declarations in accordance with §2.20 (and exhibits, if any) must accompany the petition.]

(c) ►Every petition to the Commissioner shall include a statement of the facts relevant to the petition, the points to be reviewed, and the action or rélief that is requested. Any brief in support of the petition shall be embodied in or accompany the petition. When facts are to be proved in ex parte cases (as in a petition to revive an abandoned application), the proof in the form of affidavits or declarations in accordance with §2.20, and any exhibits, shall accompany the petition. ◄ [An oral hearing will not be held except when considered necessary by the Commissioner.]

(d) ►A petition on any matter not specifically provided for by subsection (e) or by §2.165(b) or §2.184(b) shall be filed within sixty days from the date of mailing of the action from which relief is requested. ◄ [The mere filing of a petition will not stay the period for replying to an examiner's action, nor stay other proceedings.]

(e) ► (1) A petition from the denial of a request for an extension of time to file a notice of opposition shall be filed within fifteen days from the date of mailing of the denial of the request and shall be served on the attorney or other authorized representative of the applicant, if any, or on the applicant. Proof of service of the petition shall be made as provided by §2.119(a). The applicant may file a response within fifteen days from the date of service of the petition and shall serve a copy of the response on the petitioner, with proof of service as provided by §2.119(a). No further paper relating to the petition shall be filed.

(2) A petition from an interlocutory order of the Trademark Trial and Appeal Board shall be filed within thirty days after the date of mailing of the order from which relief is requested. Any brief in response to the petition shall be filed, with any supporting exhibits, within fifteen days from the date of service of the petition. Petitions and responses to petitions, and any papers accompanying a petition or response, under this subsection shall be served on every adverse party pursuant to §2.119(a). ◄ [Authority to act on a petition may, when appropriate, be delegated by the Commissioner.]

(f) ►An oral hearing will not be held on a petition except when considered necessary by the Commissioner. ◄ [No fee is required for a petition to the Commissioner.]

► (g) The mere filing of a petition to the Commissioner will not act as a stay in any appeal or inter partes proceeding that is pending before the Trademark Trial and Appeal Board nor stay the period for replying to an Office action in an application except when a stay is specifically requested and is granted or when §§2.63(b) and 2.65 are applicable to an ex parte application. ◄

► (h) Authority to act on petitions, or on any petition, may be delegated by the Commissioner. ◄

§2.147 [Removed]

44. It is proposed to remove §2.147 Cases not specifically defined.

§2.148 [Removed]

45. It is proposed to remove §2.148 Commissioner may suspend certain rules.

46. Section 2.165 is proposed to be revised to read as follows:

§2.165 Reconsideration of affidavit or declaration.

(a) ► (1) ◄ If the affidavit or declaration ►filed pursuant to §2.612 ◄ is insufficient ►or defective, the affidavit or declaration will be refused and ◄ [,] the registrant will be notified of the ►reason.◄ [reasons by the examiner.] Reconsideration of ►the◄ [such] refusal may be requested within six months from the date of the mailing of the ►action◄ [notice]. The request for reconsideration must state the grounds for the request. A ◄ [therefore; a] supplemental or substitute affidavit or declaration required by ►§◄ [section] 8 of the ►Trademark◄ Act cannot be considered unless it is ►filed◄ [received] before the expiration of six years from the date of the registration [,] or from the date of publication under ►§◄ [section] 12(c) ►of the Act◄. ►The certificate of mailing procedure provided by §1.8 does not apply to affidavits or declarations or to supplemental or substitute affidavits or declarations filed under §8 (a) or (b) of the Act.

(2) A request for reconsideration shall be a condition precedent to a petition to the Commissioner to review the refusal of the affidavit or declaration unless the first action refusing the affidavit or declaration directs the registrant to petition the Commissioner for relief, in which event the petition must be filed within six months from the date of mailing of the action.◄

(b) ►If the refusal of the affidavit or declaration is adhered to, the registrant may petition the Commissioner to review the action under §2.146(a)(2). The petition to the Commissioner requesting review of the action adhering to the refusal of the affidavit or declaration must be filed within six months from the date of mailing of the action which denied reconsideration. ◄ [If the registrant is dissatisfied with the action of the examiner holding the affidavit or declaration insufficient, he may request the Commissioner to review the action under §2.146. The decision of the Commissioner on such a request constitutes the final action of the Patent Trademark Office. If there is no review by the Commissioner, the Commissioner will notify the registrant of the insufficiency of the affidavit or declaration after the expiration of the sixth year, which notice will constitute such final action. See §2.145 for appeal to or review by court.]

►(c) The decision of the Commissioner on the petition will constitute the final action of the Patent and Trademark Office. If there is no petition to the Commissioner, the Commissioner will notify the registrant of the refusal of the affidavit or declaration after the expiration of six years from the date of registration or from the date of publication under §12(c) of the Trademark Act, and such notice will constitute the final action of the Office.◄

►(d) A petition to the Commissioner for review of the action shall be a condition precedent to an appeal to or action for review by any court.◄

47. Section 2.173 is proposed to be amended by revising paragraph (b) to read as follows:

§2.173 Amendment ►;◄ [and] disclaimer in part.

* * * * *

(b) ►No amendment in the identification of goods or services in a registration will be permitted except to restrict the identification or otherwise to change it in ways that would not require republication of the mark. ◄ [Changes in the identification of goods other than in the nature of deletions will not be permitted except under the provisions of §2.175.] No amendment seeking the elimination of a disclaimer will be permitted.

* * * * *

48. Section 2.184 is proposed to be revised to read as follows:

§2.184 Refusal of renewal.

(a) If the application for renewal is incomplete or defective, the renewal will be refused [by the Examiner of Trademarks]. The application may be completed or amended in response to a refusal, subject to the provisions of ►§◄ [§§2.62 and] 2.183. ►If a response to a refusal or renewal is not filed within six months from the date of mailing of the action, the application for re-

newal will be considered abandoned. A response to a refusal of renewal shall be a condition precedent to a petition to the Commissioner to review the refusal of renewal. ◄

(b) ► If the refusal to renewal is adhered to, the registrant may petition the Commissioner to review the action under §2.146(a)(2). The petition to the Commissioner requesting review of the action adhering to the refusal of the renewal must be filed within six months from the date of mailing of the action which adhered to the refusal. If a timely petition to the Commissioner is not filed, the application for renewal will be considered abandoned. ◄ [If the registrant is dissatisfied with the action of the examiner considering the application for renewal incomplete or defective, he may request the Commissioner to review the action under §2.146. If response to an adverse action of the examiner is not made within six months, the application for renewal will be considered abandoned.]

► (c) The decision of the Commissioner on the petition will constitute the final action of the Patent and Trademark Office. ◄

► (d) A petition to the Commissioner for review of the action shall be a condition precedent to an appeal to or action for review by any court. ◄

49. Section 2.186 is proposed to be revised to read as follows:

§2.186 Action may be taken by assignee of record.

Any action ► with respect to an assigned application or registration ◄ which may or must be taken by a registrant or applicant may be taken by the assignee [,] provided ► that ◄ the assignment has been recorded.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

May 10, 1982.

[FR Doc. 82-17525 Filed 6-28-82; 8:45 am]
BILLING CODE 35 10-10 M

Status of PTO Services

The following is an update of the status of PTO services as of July 2, 1982:

Service Item	FY 1982 Performance Goal (Calendar Days)	Actual	Comment
Internal Mail Processing & Delivery	4	3.5	See note below.
Filing Receipts:			
Patents	22	66	Reduction of 33 days since February.
Trademarks	30	43	Temporary backlog due to study of productivity standards. Expected to return to 30 days by Mid-July.
Patent Copies:			
Window Coupons	5	80% within 5 days 96% within 10 days	
Mail Coupons*	15	99% within 15 days 99% within 20 days	
Letter Orders*	20	86% within 20 days	
Certified Copies:			
Trademark Regs.	30	17	
Applications-As-Filed*	20	95% within 15 days	
File-Wrapper/Contents*		20% within 15 days 85% within 30 days	
Walk-up Certification	1	99% within 1 day	Service now includes applications-as-filed.
Trademark Search Room:			
Filing Drawings	21	33	Temporary backlog due to changeover to new type of paper for drawings.
Filing Reg. Certificates	3	5	
Patent Assignments	15	56	Backlog due to unavailable funding. Expect reduction in FY 1983.
Trademark Assignments	21	95	Backlog due to unavailable funding. Expect reduction in FY 1983.
Patent Official Gazette	Issue Date	On Schedule	
Patent Grants	Issue Date	On Schedule	
Trademark Official Gazette	Issue Date	On Schedule	
Trademark Registrations	Issue Date	On Schedule	

*Figures exclude mail processing and delivery time.

Note: Mail Processing and Delivery

The statistics for mail processing and delivery indicate the average time required to process mail from the time it is received in the Mail Room of the Patent and Trademark Office until it is delivered to the organization. For example, it reflects the time it takes for a paper to be delivered to an Examining Group, not the Examiner. Mail often receives additional clerical processing in the Group, depending on the type of document. It is not unusual for mail to take a few weeks to actually reach the Examiner. However, the official receipt date is that which is stamped in the Mail Room, reflecting the date the mail was received in the Office.

July 2, 1982.

THERESA A. BRELSFORD,
Acting Assistant Commissioner for Administration.

Department of Commerce
Patent and Trademark Office
37 CFR Parts 1-4

Revision of Patent and Trademark Fees

AGENCY: Patent and Trademark Office, Commerce

ACTION: Proposed rule; extension of comment period.

SUMMARY: On June 28, 1982, notices of proposed rulemaking were published in the Federal Register (47 FR 28042-28065) advising that the Patent and Trademark Office was proposing to amend the rules of practice in patent and trademark cases to establish procedures and fees in amounts which comply with the requirements of Public Law 96-517 or which would apply with enactment of H.R. 6260 as a Public Law.

Those notices provided that comments regarding the proposed rulemakings must be submitted on or before July 9, 1982.

At the hearings on the proposed rule changes relating to the "Revision of Patent and Trademark Fees" held on July 9, 1982, several persons requested additional time to comment on the proposed rules (§§1.9(c)-(f), 1.27 and 1.28) for implementing the procedures for the payment of lower fees by independent inventors, small business concerns, and nonprofit organizations. Requests were also received for additional time to comment on the proposed deletion of Parts 3 and 4 of Title 37, Code of Federal Regulations, which parts relate to patent and trademark forms.

In view of the requests, the Patent and Trademark Office is extending the period for written comments only on §§1.9, 1.27 and 1.28 and the proposed deletion of Parts 3 and 4 of Title 37, Code of Federal Regulations, until August 13, 1982. Adoption of these changes is being deferred at this time to permit receipt of additional comments.

DATE: The time for filing comments on §§1.9(c)-(f), 1.27, and 1.28, and the proposed deletion of Parts 3 and 4 is hereby extended to and including August 13, 1982.

ADDRESSES: FOR FURTHER INFORMATION AND SUBMISSION OF WRITTEN COMMENTS AS TO §§1.9, 1.27, 1.28 AND THE PROPOSED DELETION OF PART 3, CONTACT: R. Franklin Burnett by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington D.C. 20231.

FOR FURTHER INFORMATION AND SUBMISSION OF WRITTEN COMMENTS AS TO THE PROPOSED DELETION OF PART 4, CONTACT: Miss Maude Williams by telephone at (703) 557-2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Room 3-11C17, Washington, D.C. 20231.

July 21, 1982
Date

Gerald J. Mossinghoff
Commissioner of Patents and Trademarks

PATENT NOTICES

Certificates of Correction for the Week of July 27, 1982

D. 257,876	4,299,848	4,313,011	4,324,000
D. 264,725	4,300,153	4,313,205	4,324,031
4,080,040	4,302,217	4,314,260	4,324,808
4,087,176	4,302,488	4,314,589	4,324,873
4,197,308	4,302,582	4,314,724	4,324,958
4,205,108	4,303,958	4,314,945	4,325,186
4,214,084	4,304,675	4,316,713	4,325,328
4,220,531	4,304,805	4,317,198	4,325,758
4,224,662	4,305,667	4,318,184	4,326,240
4,235,919	4,305,834	4,318,825	4,326,267
4,236,069	4,305,835	4,319,258	4,326,388
4,241,877	4,305,849	4,319,497	4,326,655
4,254,759	4,306,733	4,319,831	4,326,994
4,260,422	4,306,857	4,319,945	4,327,240
4,260,534	4,306,915	4,320,274	4,328,034
4,267,308	4,306,969	4,320,503	4,328,588
4,271,254	4,306,970	4,320,811	4,328,718
4,272,966	4,307,170	4,321,368	4,328,748
4,275,965	4,307,629	4,321,584	4,329,065
4,278,100	4,307,766	4,321,948	4,329,235
4,278,676	4,307,881	4,322,435	4,329,302
4,282,407	4,308,952	4,322,668	4,330,721
4,283,891	4,308,956	4,322,808	4,330,798
4,287,093	4,309,409	4,323,516	
4,293,416	4,311,523	4,323,862	
4,295,414	4,312,588	4,323,863	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
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	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
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	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF June 12, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	4-03-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-12-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-11-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	8-29-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	6-22-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing, Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-03-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	5-01-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-24-80

Expiration of patents: The patents within the range of numbers indicated below expire during May 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,186,004 to 3,192,535, inclusive

Plant Patents ..... Numbers 2,522 to 2,542 inclusive

REISSUES

JULY 27, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

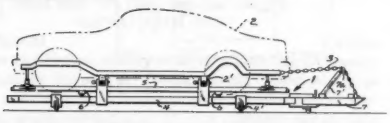
Re. 31,000
METHOD AND APPARATUS FOR REFORMING AND STRAIGHTENING VEHICLES

Pierre N. LeGrand, Soumagne, Belgium, and Dirk J. van Dalen, Palm Beach, Fla., assignors to Applied Power, Milwaukee, Wis.

Original No. 4,193,203, dated Mar. 18, 1980, Ser. No. 896,186, Apr. 14, 1978. Division of Ser. No. 831,508, Sep. 8, 1977, Pat. No. 4,174,673. Application for reissue Apr. 3, 1981, Ser. No. 242,056

Int. Cl.³ B21D *1/14*; G01B *5/24*

U.S. Cl. 33—180 AT **11 Claims**



1. A measuring bridge for use in an apparatus for straightening and reforming a vehicle for indicating and monitoring the magnitude of correction in the repair of the vehicle, said measuring bridge being supported on a surface below the vehicle and comprising:

a plurality of interconnected tracks,

a plurality of independent support means movably mounted on said tracks for at least longitudinal and lateral movement,

a plurality of reference elements mounted on said independent support means and engageable with datum points on undamaged portions of the vehicle to provide predetermined reference positioning of the measuring bridge with respect to the vehicle,

a plurality of indicating elements mounted on said independent support means and [in coupling relationship with datum points on damaged and unaligned portions of the vehicle, said indicating elements responding to the application of corrective forces to provide a continuous] *providing an* indication of the [magnitude of] correction of the vehicle,

and means disposed between the tracks and the supporting surface for positioning the tracks and elements mounted thereon relative the vehicle before and during repair thereof and the reference elements in engagement with the vehicle, said positioning means including roller means for permitting rolling movement between the tracks and the supporting surface.

Re. 31,001
DAMPER ASSEMBLY OF PIANOS

Hiroyoshi Takahashi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Original No. 4,203,341, dated May 20, 1980, Ser. No. 897,404, Apr. 18, 1978. Application for reissue Jul. 28, 1980, Ser. No. 172,564

Claims priority, application Japan, Apr. 26, 1977, 52-52181[U]

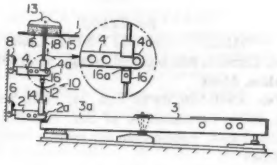
Int. Cl.³ G10C *3/22*

U.S. Cl. 84—255 **4 Claims**

4. An improved damper assembly of pianos comprising:

a lower lever having one end pivoted to a fixed support and having a free end operationally related to the rear end portion of an associated key, such that motion of the key causes the rear end portion thereof to pivot said lower lever; an upper damper lever having a respective one end pivoted to a fixed support and being spaced from and arranged over said lower damper lever;

a motion transmitting damper wire carried at the bottom end thereof by the free end of said upper damper lever, said damper wire being relatively short and fixedly connected with said upper damper lever so that said damper wire is raised and lowered by said upper damper lever; and as it is raised and lowered, said damper wire also maintains the same tilt orientation as said upper damper lever as said upper damper lever pivots; an upwardly held damper head raisable off and lowerable onto an associated string for respectively permitting



and damping vibration of that string, and said damper wire at the upper end thereof holding said damper head for movement to raise and lower said damper head as said damper wire is raised and lowered, respectively, and

a linking element interposed between said upper and lower damper levers for linking said levers to pivot together, said linking element being fixedly connected to said lower lever at one end thereof and having a supporting part at the other end thereof, the free end of said upper damper lever resting on and supported by said supported part, whereby said linking element does not move rigidly with the said upper damper lever with respect to which said linking element is pivotable.

Re. 31,002
N-(3-HYDROXYARYL-PROPYL)-IMIDES

Hanns Lind, Liestel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

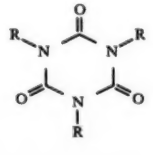
Original No. 3,956,298, dated May 11, 1976, Ser. No. 452,763, Mar. 19, 1974. Application for reissue May 10, 1978, Ser. No. 904,640

Claims priority, application Switzerland, Apr. 11, 1973, 5163/73

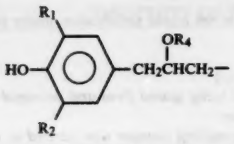
Int. Cl.³ C07D *251/34*

U.S. Cl. 544—221 **4 Claims**

7. A compound of the formula



wherein each R is



in which each of R_1 and R_2 is alkyl of 1 to 8 carbon atoms and R_4 is hydrogen or

in which $R_5$is alkyl of 1 to 17 carbon atoms or 2-(3,5-di-t-butyl-4-hydroxyphenyl)ethyl.

Re. 31,003

HIGH INTENSITY SPOTLIGHT

Thomas M. Lemons, Marblehead, Mass., assignor to ARC Sales, Inc., Salem, Mass.

Original No. 3,940,606, dated Feb. 24, 1976, Ser. No. 490,052, Jul. 19, 1974. Continuation of Ser. No. 915,683, Mar. 21, 1978, abandoned. Application for reissue Nov. 10, 1980, Ser. No. 205,641

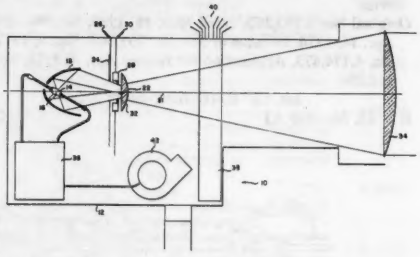
Int. Cl.³ F21V *21/29*

U.S. Cl. 362—287 **4 Claims**

8. A spotlight for projecting light comprising

(a) a concave, substantially prolate-spheriodal reflector having on the major axis thereof a first and a second focal point within and remote from the reflector respectively, said reflector having a front circular opening lying in a plane perpendicular to said major axis, the radius of said circular opening being less than the semi-minor axis of a prolate-spheriod of the same dimension as the reflector,

(b) a high intensity halide source having a donut radiation pattern positioned at said first focal point, the source having opposed electrodes generating an arc within a discharge bulb, the electrodes defining a source axis which is inclined with respect to said major axis at an angle between 25° and 35°, whereby the reflector views the shortest length of said arc and gathers a maximum amount of emitted light energy,



(c) the image of said arc source being re-imaged at said second focal point by said reflector,

(d) the intersecting source axis and major axis defining a substantially vertical plane,

(e) said reflector having a rear circular opening for one electrode of said source,

(f) and a controlled aperture positioned at said second focal point,

(g) said reflector having a focal length between one half to one and a quarter times the length of said arc source.

PLANT PATENTS

GRANTED JULY 27, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,869

WHITE FLOWERING DOGWOOD— WORLD'S FAIR VARIETY

J. Austin Boyd, McMinnville, Tenn., assignor to The Boyd Brothers Company, McMinnville, Tenn.

Filed Mar. 16, 1981, Ser. No. 244,078
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of white Flowering Dogwood tree, botanically known as *Cornus florida,* substantially as illustrated and described, characterized particularly as to novelty by the unique combination of (1) a compact and upright growth habit, (2) stocky trunk, (3) strong limbs of relatively large diameter, (4) the display of attractive white blossoms often in relatively closely disposed clusters, (5) the display of more white blossoms than the Cloud 9 variety and the Imperial White variety, (6) the display of white blossoms which are slightly smaller than those of the Cloud 9 variety and the Imperial White variety, (7) the display of white blossoms approximately one week later than the Cloud 9 variety, (8) good hardiness, and (9) improved resistance to drought.

4,870

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "OPTIMARA", Isselburg, Fed. Rep. of Germany

Filed Jul. 25, 1980, Ser. No. 172,464
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet known by the cultivar name Illinois, as described and illustrated, and particularly characterized by its large pink, star-shaped flowers; strong, upright flower stems each carrying 7–10 flowers; heavy and prominent yellow pollen sacs; vigorous and uniform growth habit, producing a plant in full flower in 9–10 weeks.

PATENTS

GRANTED JUL. 27, 1982

ERRATA

For CLASS	See PATENT NO.
374–170	4,341,117
116–221	4,341,118
416–134	4,341,499
525–211	4,341,667
524–297	4,341,668
523–205	4,341,669
528–338	4,341,670
528–324	4,341,671
523–451	4,341,672
524–272	4,341,673
524–156	4,341,674
524–266	4,341,675
523–417	4,341,676
523–421	4,341,677
523–414	4,341,678
524–833	4,341,679
525–329	4,341,680
524–555	4,341,681
523–409	4,341,682
524–503	4,341,683
523–175	4,341,684
524–104	4,341,685
427–244	4,341,686
524–500	4,341,687
524–592	4,341,688
523–211	4,341,689
524–451	4,341,690
523–116	4,341,691
524–263	4,341,692
524–093	4,341,693
524–342	4,341,695
524–139	4,341,696
549–272	4,341,709
549–214	4,341,710
549–500	4,341,711
373–022	4,341,915
373–128	4,341,916

PATENTS

GRANTED JULY 27, 1982

GENERAL AND MECHANICAL

4,340,976

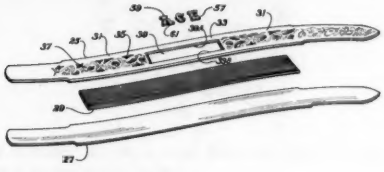
FILIGREED BELT AND PROCESS

Jerry D. Wright, Comanche, Tex., assignor to Wright Leather Goods Manufacturing Co., Comanche, Tex.

Filed Oct. 9, 1979, Ser. No. 82,870

Int. Cl.³ A41F *9/00*; B32B *9/02*; A41D *27/08*; G09F *9/30*

U.S. Cl. 2—338 **57 Claims**



1. A leather product, comprising:
an outer layer attached to second layer means,
an opening formed through said outer layer,
said opening having first and second opposite edges, and
separate indicia means having front and back sides and first and second opposite edges,
said separate indicia means being located in said opening with the back side of said indicia means engaging and being bonded with glue to the layer exposed through said opening and with said first and second opposite edges of said indicia means engaging and being bonded with glue to said first and second opposite edges respectively of said opening.

15. A belt, comprising:
an outer layer attached to second layer means,
an opening formed through said outer layer,
said opening having top and bottom edges, and
separate indicia means having front and back sides and top and bottom edges,
said separate indicia means being located in said opening with said back side of said indicia means engaging and being bonded with glue to the layer exposed through said opening and with said top and bottom edges of said indicia means engaging and being bonded with glue to said top and bottom edges respectively of said opening.

4,340,977

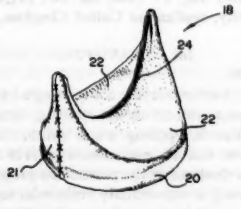
CATENARY MITRAL VALVE REPLACEMENT

Richard T. Brownlee, #101, 1780 Fort St., Victoria, British Columbia, Canada (V8R 1J5); Lawrence N. Scotten, 814-Langham Ct., Victoria, British Columbia, Canada (V8V 4J2), and David K. Walker, 1576 Cedarglen Rd., Victoria, British Columbia, Canada (V8N 2B2)

Filed Sep. 19, 1980, Ser. No. 188,817

Int. Cl.³ A61F *1/22*

U.S. Cl. 3—1.5 **10 Claims**



1. A mitral heart valve comprising: a stent including a circular base and a pair of upstanding diametrically opposed struts, separating a pair of diametrically opposed arcuately shaped depressed reliefs, each said said relief being bounded by a smooth curve interconnecting the struts to the circular base; a flexible, durable, biocompatible covering secured to said stent and providing two equal opposed preset flappably movable valve cusps secured along said smooth curve defining the perimeter of said reliefs; said valve cusps each being preformed and preset so that the perimeter of said biocompatible covering along the free edge of each of said cusps between the tips of each associated strut being so related to the circumference of the circular base that, when the valve is in its forced open position, the cross-sectional area of the exit is substantially equal to the cross-sectional area of the inside of said circular base, and, when said valve is in its relaxed and natural closed position, the shape of said cusps is such that the free edges of the cusps sealingly meet in substantially wrinkle-free form at a line of apposition in the plane defined by the tips of said struts and the axis of the valve and follow the approximate shape of a catenary curve.

4,340,978

NEW JERSEY MENISCAL BEARING KNEE REPLACEMENT

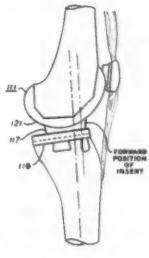
Frederick F. Buechel, and Michael J. Pappas, both of Irvington, N.J., assignors to Biomedical Engineering Corp., Newark, N.J.

Division of Ser. No. 53,694, Jul. 2, 1979, Pat. No. 4,309,778.

This application Jun. 23, 1980, Ser. No. 162,070

Int. Cl.³ A61F *1/03*

U.S. Cl. 3—1.911 **6 Claims**



1. An improved prosthetic knee joint for implantation in the knee of the type including:
(a) tibial platform means having a first superior bearing surface at least a portion of which has no substantial curvature in the anterior-posterior direction, the tibial platform means for replacing tibial portions of a knee;
(b) bearing insert means having a first inferior bearing surface for slidably engaging at least the portion of the first superior bearing surface of the tibial platform means which has no substantial curvature in the anterior-posterior direction, the bearing insert means having a second superior bearing surface, the bearing insert means for providing an articulated joint between the tibial platform means and a femoral component means;
(c) femoral component means having a second inferior bearing surface for slidably engaging the second superior bearing surface of the bearing insert means, the femoral component means for replacing femoral portions of the knee;
wherein the improvement comprises
(d) the bearing insert means experiencing anterior-posterior

shift relative to at least the portion of the first superior bearing surface of the tibial platform means which has no substantial curvature in the anterior-posterior direction during flexion and extension of the knee; and

wherein the improvement comprises:

(e) the second inferior bearing surface of the femoral component means comprising a plurality of surface segments defined by rotating a common plane generating curve about a plurality of parallel axes of rotation whereby the second inferior bearing surface of the femoral component upon slidably engaging the second superior bearing surface of the bearing insert means facilitates control of the anterior-posterior shift of the bearing insert means relative to at least the portion of the first superior bearing surface of the tibial platform means which has no substantial curvature in the anterior-posterior direction during flexion and extension of the knee.

4,340,979

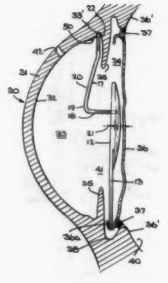
INTRAOCULAR LENS

Charles D. Kelman, 269-70 Grand Central Pkwy., Floral Park, N.Y. 11005

Filed Mar. 18, 1981, Ser. No. 244,930

Int. Cl.³ A61F *1/16, 1/24*

U.S. Cl. 3—13 **14 Claims**



1. An intraocular lens suitable for use as an articifial lens implant, the lens comprising:

a medial, light-focusing, lens body intended to be positioned adjacent the pupil on one side of the iris; and

at least a pair of position fixation elements connected with said lens body;

one of said position fixation elements having a first portion contiguous to and extending generally laterally outwardly from a first region of the periphery of said lens body and intended to extend to and seat adjacent the periphery of the iris on said one side thereof;

the other of said position fixation elements having a first portion extending from the lens body and intended to extend through the pupil of the eye from said one side of the iris to the other side of the iris and another portion extending from said first portion generally laterally outwardly from a second region of the periphery of said lens body spaced from said first region and in a direction generally opposite that of said first portion of said one position fixation element and intended to extend to and seat adjacent the periphery of the iris on said other side thereof.

4,340,980

WATER CLOSET WITH TOPICAL BODY WASHER

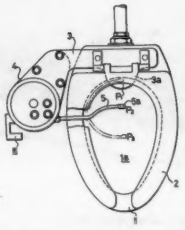
Takehiko Fushimi; Shinji Kawai, and Kazutaka Kuwana, all of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Jan. 22, 1981, Ser. No. 227,498

Claims priority, application Japan, Feb. 19, 1980, 55-19889[U]

Int. Cl.³ A47K *4/00, 4/03*

U.S. Cl. 4—448 **5 Claims**



1. A water closet having a bowl, a pump and a topical body washing means, comprising:

a container for holding washing water;

a spout pipe having a jet nozzle at the distal end thereof, rotatably supported in said container and extending perpendicularly to the longitudinal center line of said bowl of said water closet.

means for movably shifting said jet pipe and for shifting said jet nozzle at the distal end thereof fixably to at least three positions along said longitudinal center line of said bowl;

a rotatable operating lever for shifting the position of said spout pipe between a first, second and third position;

a switch operated in relation with the rotation of said operating lever to close at said second and third position of said spout pipe;

a motor for driving said pump for pushing forward washing water in said container toward said spout pipe; and

a motor drive control circuit comprising a switching element connected in series to said motor and said switch and a delay circuit for actuating said switching element upon lapse of a predetermined time period after actuation of said switch.

4,340,981

BATHING DEVICE

Paul Vanags, Swansea, Wales, assignor to Portasauna Limited, Merthyr Tydfil, Wales

Filed Aug. 27, 1980, Ser. No. 181,837

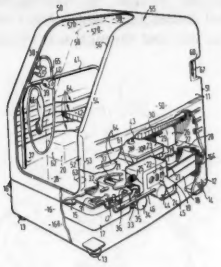
Claims priority, application United Kingdom, Aug. 30, 1979, 7930108

Int. Cl.³ A61H *33/06*

U.S. Cl. 4—536 **10 Claims**

1. A portable bathing device comprising a cabinet having an upper casing part with an access opening, means at least substantially to close the opening, a seat within the upper part on which a person can sit, and means providing an aperture through which the head of the person can project, and a lower casing part having a substantially horizontal top wall substantially separating said lower casing from said upper casing, said lower casing containing a reservoir for water, a heating element, means to supply water from the reservoir to the heating element to generate steam, means to supply water from the

reservoir to the interior of said upper casing part to wash a person, a holding tank in said lower casing for used water, and



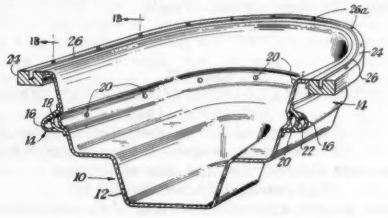
means to collect the used water from said upper casing and deliver it to the holding tank.

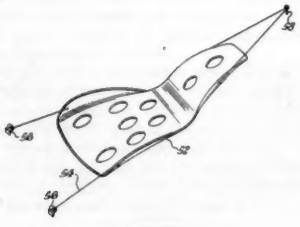
4,340,982

HYDROTHERAPY BATH OR SPA

James F. Hart, and Deborah L. Hart, both of 2012 NE. 17th Ter., Fort Lauderdale, Fla. 33305

Filed Mar. 24, 1981, Ser. No. 246,957
Int. Cl.³ E03C *1/02;* A47K *3/02*
U.S. Cl. 4—541 **10 Claims**





1. A hydrotherapy system having:

a waterproof shell defining a receptacle for use as a spa, tub or swimming pool, said shell having means forming a plurality of first holes spaced apart along its interior;

and multiple jet manifold means defining a water passageway extending along the outside of said shell at said holes and an air passageway located between said water passageway and the outside of said shell and opening into the interior of the shell through said holes, said manifold means having a second hole leading from said water passageway into said air passageway at each of said first holes to provide aerated impact water through said first holes;

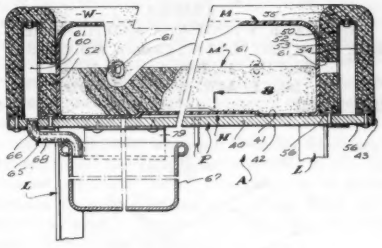
said shell forming a wall of said manifold means.

4,340,983

CRIB FLOTATION BED

James P. McMullan, 2630 Seaman Ave., El Monte, Calif. 91733; Rudy E. Lindsay, Garden Grove, and Jerry E. Land, Huntington Beach, both of Calif., assignors to James P. McMullan, Garden Grove, Calif.

Filed Oct. 19, 1979, Ser. No. 86,406
Int. Cl.³ A47C *27/08;* A47D *7/00, 13/06*
U.S. Cl. 5—93 R **12 Claims**



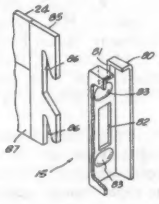
1. A water bed crib including a water bed structure comprising an elongate flat, horizontal rectangular platform with an upwardly projecting weir about its perimeter, a water filled flexible bladder mattress in supported engagement atop the platform and contained about its perimeter by said weir, elongate vertical platform legs fixed to and depending from the four corner portions of the platform, crib frame supporting brackets on and projecting outwardly from the platform legs; and a rectangular crib frame comprising longitudinally spaced, transversely extending vertical end boards, laterally spaced longitudinally extending vertical side gates extending between and connected with related sides of the end boards and elongate vertical crib legs at and depending from the four corners of the frame, said crib frame is positioned substantially freely about the water bed structure with said crib frame legs in supported engagement on said brackets.

4,340,984

HEADBOARD COUPLING FOR KNOCK-DOWN BED

Stanley T. Marcyan, 515 W. Windsor Rd., Glendale, Calif. 91204

Division of Ser. No. 923,243, Jul. 10, 1978, Pat. No. 4,202,062. This application Jun. 14, 1979, Ser. No. 48,649
Int. Cl.³ A47C *19/02;* A61G *7/10*
U.S. Cl. 5—296 **4 Claims**



1. A separable coupling for holding a bed side rail separably to the leg of a bed head board comprising:

a channel-shaped female coupling member adapted to have each edge of its side flanges welded to a respective one of the opposite lateral edges of a head board supporting leg;

said channel-shaped member having a pair of elongated slots extending lengthwise of the web portion thereof with the lower end of each overlying a respective inwardly projecting dimple providing a camming surface; and

an elongated male coupling member having a pair of inverted V-shaped notches opening downwardly through

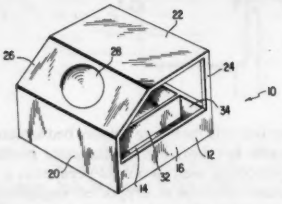
one longer lateral edge thereof forming a pair of hooks adapted to be inserted through a respective one of the slots in the web of said channel member, the innermost edge of said notches being vertically aligned and the other pair of edges being similarly inclined to the vertical and engageable with the camming surface of a respective one of said dimples as said male member is pressed downwardly in said slots thereby clamping said coupling members firmly and immovably together.

4,340,985

MECHANIC'S TOOL BOX AND HEAD REST

John H. Potter, 1237 N. 27 St., Camden, N.J. 08105

Filed Dec. 16, 1980, Ser. No. 217,141
Int. Cl.³ A47G 9/00; A47B 81/00
U.S. Cl. 5—442 **3 Claims**



1. Combination tool box and head rest comprising: a hollow container having a top and a bottom, which are rigidly and fixed with respect to each other, said top wall having a front portion and a horizontal rear portion parallel to said bottom, spaced apart side walls rising from said bottom and terminating at a point spaced from said top so as to form large openings on opposite sides of said container, a front wall extending between and connecting said side walls and said top and bottom, a back wall rising from said bottom and terminating at a point spaced from said top, a pair of pillars extending from intersections of said side walls and said back wall to said top and forming a large opening between said top and back wall, the front portion of said top wall being downwardly inclined and provided with a centrally located depression adapted to receive a human head, and at least one divider having an edge fixed to said bottom and extending between said front wall and said back wall to form a plurality of compartments for containing tools, replacement parts, or the like.

4,340,986

METHOD FOR WET PROCESSING OF TEXTILE MATERIAL IN ENDLESS ROPE FORM

William C. Sturkey, Charlotte, N.C., assignor to Gaston County Dyeing Machine Company, Mount Holly, N.C.

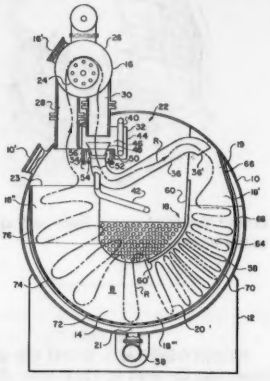
Division of Ser. No. 169,145, Jul. 15, 1980, Pat. No. 4,318,286. This application Oct. 29, 1981, Ser. No. 316,229
Int. Cl.³ D06B 3/28
U.S. Cl. 8—152 **3 Claims**

1. A method of wet processing textile material in endless rope form comprising the steps of:

(a) providing a treating bath of processing liquid;

(b) circulating the rope through said treating bath of processing liquid by transiently storing a plaited accumulation of a major portion of the rope in said treating bath along a curved path extending downwardly to a lowermost point within said treating bath and upwardly therefrom while progressively withdrawing the rope from said treating bath at one end of said curved path and returning it to said treating bath at the other end of said curved path under the entraining influence of a moving cycled portion of said processing liquid;

(c) partially confining the rope and said portion of said processing liquid along said curved path as they are returned to said treating bath, the confinement extending downwardly into said treating bath and being sufficient to maintain a significant quantity of said portion of said processing liquid in columnar form extending substantially above the level of the treating bath whereby the gravitational forces generated thereby will assist in moving the rope into and through said treating bath; and



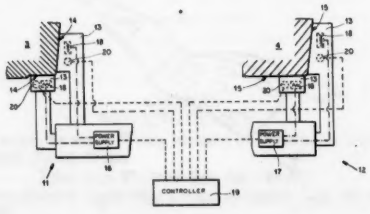
(d) releasing the confinement of the rope at a location along said curved path upstream of said lowermost point thereof whereby said plaited accumulation of the rope can expand as it reaches said lowermost point and begins to progress upwardly along said curved path.

4,340,987

ELEMENT FOR CLEANING COKING-OVEN DOORS AND DOORJAMB

Karl Gregor, Bochum, and Karl Feldhaus, Gelsenkirchen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Schalker Eisenhütte, Gelsenkirchen, Fed. Rep. of Germany

Filed Jul. 25, 1980, Ser. No. 172,267
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1979, 2930350
Int. Cl.³ C10B 43/04
U.S. Cl. 15—93 A **5 Claims**



1. In an apparatus having an element for cleaning deposits from the edge of a doorjamb or door of a coking oven, the improvement comprising:

means for heating said element to a temperature above the softening point of said deposits; and

control means including

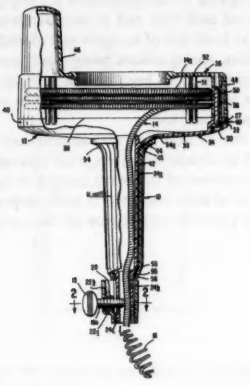
a temperature sensor in said element for detecting the actual temperature thereof and

means for applying heat to said element to heat same sufficiently to raise its temperature from its actual temperature to a temperature between 100° C. and 200° C. for maintaining said temperature between 100° C. and 200° C.

4,340,988
CANISTER AUGER

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed Mar. 11, 1981, Ser. No. 242,463
Int. Cl.³ B08B 9/02
U.S. Cl. 15—104.3 SN 9 Claims



1. In an auger device that includes an elongated, helically wound, auger wire with an enlarged head at the exposed working end of said auger wire, driver means for selectively rotating said exposed working end of said auger wire, said driver means including a laterally enlarged storage housing, for storing the excess length of the auger wire, with an axially elongated tubular guide extending therefrom and from which the working end of the auger wire projects, and an elongated tubular journal sleeve surrounding a portion of said tubular guide and being of a length to be conveniently held in one hand while the driver means and said exposed working end of the auger wire are rotated by the other hand; the improvement comprising, in combination:

an end of the tubular guide projecting beyond said journal sleeve and having a first laterally opening aperture therein;

a nut holder constructed for encirclement of a portion of said tubular guide that projects beyond said journal sleeve;

a second lateral aperture in said nut holder adapted to be axially aligned with said first laterally opening aperture; said nut holder being shaped and arranged to provide therein a pocket means adapted to receive and properly position therein a nut-shaped element;

a threaded nut held in said pocket means with its bore aligned with and spaced between said first and second lateral apertures; and an elongated, threaded clamp pin shank with a manually actuatable head at the outer end thereof, said pin being threaded through said nut, and with its inner end extending freely through said first lateral aperture to provide for selective clamping of the auger wire between the terminus of the inner end of the clamp pin and the tubular guide.

4,340,989
CLEANING SYSTEM FOR CHIMNEYS

Frank A. Rotondi, Dore Hill Rd., Box 288, Athens, Me. 04912, and Howard W. Salley, P.O. Box 406, Pittsfield, Me. 04967

Filed Jan. 22, 1981, Ser. No. 227,318
Int. Cl.³ F23J 3/00
U.S. Cl. 15—249 4 Claims

1. A readily removable cleaning system in a chimney comprising in combination:

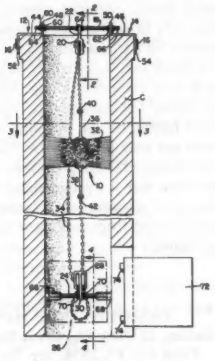
a. adjacent the top of a chimney a pair of bracket members each having a generally horizontally extending center portion disposed on an upper edge surface of the chimney oppositely from the upper edge surface on which the other center portion is disposed, a generally vertically extending upwardly directed inner portion with an aperture, and a generally vertically extending downwardly directed outer portion embracing an outer chimney wall surface oppositely from that embraced by the other downwardly directed outer portion;

b. means extending around the downwardly directed portions of both of said bracket members and the outside of the chimney to removably secure said bracket members to the chimney;

c. an upper threaded rod extending outside of and across the top of the chimney and through the apertures of said inner portions of said bracket members with means disposed adjacent opposite ends of said upper rod adjustably securing said upper rod on opposite sides of said upwardly directed inner portions whereby the effective length of said upper rod may be adjusted to secure said upper rod in position;

d. an upper single pulley block unit extending down into the chimney from a mounting flange suspended on said upper threaded rod and a pair of nuts, one each of which is threaded on said upper rod on opposite sides of said mounting flange to cooperatively adjustably secure said pulley block unit in position;

e. a lower threaded rod extending within the chimney,



below said upper threaded rod generally parallel thereto, and adjacent to a chimney cleanout opening;

f. abutment members threadedly secured on opposite ends of said lower threaded rod and in pressure relationship against opposite inner wall surfaces of the chimney;

g. a lower double pulley block unit extending upwardly from a mounting plate adjustably secured on said lower threaded rod with a further pair of nuts threaded on said lower threaded rod in clamping relationship against opposite sides of said mounting plate;

h. chimney cleaning means disposed within the chimney between said upper and lower pulley block units, said cleaning means including upwardly and downwardly directed connecting links; and

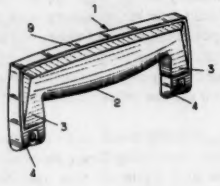
i. a chain, cable, or like member having a first end connected to said upwardly directed link, extending up from said upwardly directed link to the upper single pulley, through a front side, over the upper pulley to a back side of the upper pulley, down to the lower double pulley unit, in the back of the lower unit, under and partially around one of the lower pulley members, up the front of the lower block, under the other lower pulley member, and out the back of the lower block, and up to and connected to the downwardly directed connecting link, whereby said brush may be pulled up and down the chimney to clean it.

4,340,990

OBJECT INTENDED TO BE HELD IN THE HAND, IN PARTICULAR A SUITCASE HANDLE, AND A PROCESS FOR MANUFACTURING SAME

Andre G. Seynhaeve, Senlis, France, assignor to Societe Delsey, Bobigny, France

Filed Dec. 18, 1979, Ser. No. 104,805
Claims priority, application France, Dec. 28, 1978, 78 36695
Int. Cl.[3] A45C *13/26*
U.S. Cl. 16—126 12 Claims



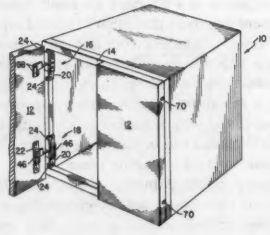
1. A handle for a portable object, comprising:
a body formed from a compact moulded plastic material, said body having a grasping zone whose hardness is less than that of the remainder of said body;
an expanded plastic material entirely located within said body and only in said grasping zone; and
a frame formed by a U-shape metal section having a flat web including inner and outer edges, said outer edge having a transverse web extending along the base and legs of said U-shape frame, the ends of said legs including means for fitting said handle to said portable object,
wherein said flat web is located within said body with said means for fitting extending outside of said body, wherein said transverse web is located along the outer periphery of said body, and wherein said expanded plastic material is positioned inward from said inner edge of the base of said U-shape frame.

4,340,991

DEMOUNTABLE HINGE

Edward D. Gidseg, 22 Park Pl., Great Neck, N.Y. 11021

Filed Jul. 17, 1979, Ser. No. 58,294
Int. Cl.[3] E05D *1/06, 7/10*
U.S. Cl. 16—254 31 Claims



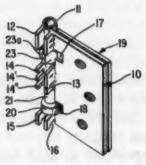
1. A hinge for mounting a door or the like to a frame or the like, which comprises:
(a) first receiver means attachable to the frame, said first receiver means including guide means to position said receiver means with respect to the frame;
(b) a first hinge section defining a tab portion, said tab portion being configured for mating engaged reception by a portion of said receiver means to facilitate selective engaged attachment and/or detachment with respect to the frame;
(c) second receiver means attachable to the door;
(d) a second hinge section pivotally attached to said first hinge section, said second hinge section defining a tab portion configured for mating engaged reception by a portion of said second receiver means to facilitate selective engaged attachment and/or detachment with respect to the door;
(e) resilient spring means positioned for engagement with at least one of said first and second sections to retain the hinge in at least one of an open and closed door position, said resilient spring means being positioned to engage at least a portion of at least one of said hinge sections to retain the sections in at least one of open and closed door relative positions; and
(f) at least one of said first and second sections defining a portion in an area adjacent the pivot axis raised away from adjacent portions of the other section to facilitate pivotal rotation of at least one section with respect to the other section to prevent interference of the sections.

4,340,992

HINGE CATCH

Aldolfo Lombardi, 288 Cunningham Ave., Ottawa, Canada K1H 6B4

Filed Jun. 10, 1980, Ser. No. 158,279
Claims priority, application Canada, Oct. 19, 1979, 338040
Int. Cl.[3] E05D *11/06*
U.S. Cl. 16—349 12 Claims

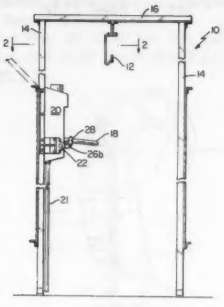


1. A lockable butt hinge comprising:
(a) a first butt plate including along one side edge thereof at least three axially spaced gudgeons for receiving a pintle, pairs of diametrically spaced axially extending rigid flanges projecting outwardly from said gudgeons with one flange of one of said pairs of flanges containing at least two horizontal slots,
(b) a second butt plate including along one side edge thereof at least two axially spaced gudgeons adapted to fit between the first butt plate gudgeons and receive a common pintle, one of said gudgeons including a radially projecting axially extending rigid abutment flange,
(c) a pintle adapted to pass through said gudgeons to hold said first and second butt plates in pivotal relationship,
(d) a slide bolt adapted to slide within a vertical gap formed between said first butt plate rigid flanges and to move into engagement with said second butt plate rigid abutment flange to thereby limit the opening of the door or move out of engagement with the abutment flange to permit free opening of the door, said slide bolt including a radial pin projecting outwardly therefrom for manipulating the bolt and
(e) a cover plate adapted to cover the vertical gap containing the bolt.

4,340,993
ELECTRICAL STIMULATION BAR FOR AN ANIMAL CARCASS

Franklin M. Cook, San Mateo, Calif., assignor to LeFiell Company, San Francisco, Calif.

Filed Feb. 21, 1980, Ser. No. 123,479
Int. Cl.³ A22C *9/00*
U.S. Cl. 17—25 **10 Claims**



1. An apparatus for applying an electrical stimulation to an animal carcass, comprising:

(a) a base;

(b) a transport mechanism operative to move an animal carcass along a predetermined path relative to said base;

(c) a sterilization chamber mounted upon said base;

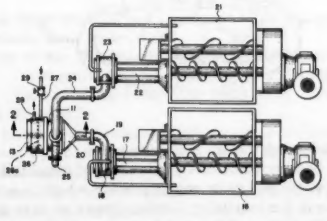
(d) an elongated electrical stimulation bar extending substantially in the direction of said predetermined path and pivotally mounted with respect to said sterilization chamber for movement about an axis non-coincident to said elongated bar and substantially parallel to said predetermined path between a first position in which the stimulation bar extends along the predetermined path for contact with an animal carcass and a second position in which the stimulation bar is disposed within the sterilization chamber; and

(e) means for moving the stimulation bar between the first and second positions.

4,340,994
APPARATUS AND METHOD FOR PRODUCING SIMULATED CUTS OF MEAT

Claudio dos Santos, and Archie R. McFarland, both of Salt Lake County, Utah, assignors to Beehive Machinery, Inc., Sandy, Utah

Filed Feb. 22, 1980, Ser. No. 123,661
Int. Cl.³ A22C *7/00*; A23J *1/14*
U.S. Cl. 17—45 **11 Claims**



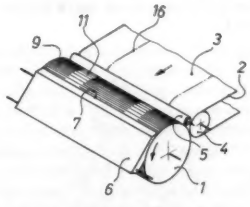
1. In apparatus for forming a composite meat and fat product simulating the pattern of a natural commercial cut of meat, which apparatus includes an extrusion die having separate passages for meat and fat, respectively, collectively forming a pattern conforming to a natural commercial cut of mean; means for supplying massed pieces of meat mixed with a binder; means for supplying a mass of fat; meat conduit means leading from said meat supplying means to the die meat passages; means for forcing meat from said meat supplying means through said meat conduit means to and through said die meat passages; means for forcing fat from said fat supplying means through said fat conduit means to and through said fat die passages; and means at the discharge end of said extrusion die for consolidating the separately extruded meat and fat into a column which may be cut transversely at intervals to form simulated natural commercial cuts of meat, the improvement comprising means associated with one or more of said consolidating means, die, and conduit means for heating selected parts thereof which are contacted by said fat relative to other parts thereof which are contacted by said meat to a controlled temperature sufficient to ease the flow of said fat therethrough relative to said meat, the parts contacted by said meat being free of heating means so as to remain unheated relative to the heated parts contacted by the fat.

7. In a method of fabricating simulated cuts of meat which includes continuously feeding meat material and fat material through respective conduit structures to separate portions of a coextrusion die structure, respectively, and extruding said materials through said die structure and through material-consolidating product discharge structure, the improvement comprising heating portions of one or more of the product discharge structure, the die structure, and the conduit structure contacted by said fat material relative to other portions thereof contacted by said meat material, to a temperature substantially no greater than will melt fat interfaced with one or more of said structures and thereby facilitate pattern control, the portions contacted by said meat remaining unheated relative to the heated portions contacted by the fat.

4,340,995
APPARATUS FOR SKINNING FISH

Horst Braeger, Lübeck, Fed. Rep. of Germany, assignor to Nordischer Maschinenbau Rud. Baader GmbH and Co Kg, Lübeck, Fed. Rep. of Germany

Filed Apr. 2, 1981, Ser. No. 250,306
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1980, 3021151
Int. Cl.³ A22C *25/17*
U.S. Cl. 17—62 **12 Claims**



1. Apparatus for skinning fish fillets, said apparatus including feed means, a skinning roller adapted to be rotated in a direction of rotation, said skinning roller having a longitudinal axis and a peripheral surface, a skinning knife having a cutting edge, said cutting edge being spaced by a small distance from said peripheral surface, and presser means situated below said cutting edge and adjacent said peripheral surface, said peripheral surface carrying an array of first grooves extending around said peripheral surface, said first grooves being spaced apart by a first distance, said first distance not exceeding 68 thousandths of an inch, said peripheral surface also carrying at least one array of second grooves extending around said peripheral surface and disposed adjacent said array of first grooves, said second grooves being spaced apart by a second distance, said first grooves and said second grooves extending

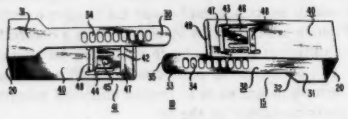
substantially parallel to said longitudinal axis and said second distance being greater than said first distance.

4,340,996

ADJUSTABLE CABLE CLAMP

Jeremia P. Starace, Randolph Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1979, Ser. No. 106,004
Int. Cl.³ B65D *63/02;* H01R *5/02;* A44B *21/00*
U.S. Cl. 24—20 R **5 Claims**



1. A clamping device comprising a pair of clips, each of said clips being U-shaped and having laterally disposed first and second legs

characterized by

a rachet mechanism and slotted beam mechanism formed, respectively, with said first and second legs, said beam mechanism from each one of said clips adapted to slidably interlock with said ratchet mechanism from the other of said clips, said rachet mechanism including

a pair of spaced-apart, laterally disposed shoulders,

a platform joined to said shoulders and oriented in a parallel relation to said first leg, said platform being partially cut away to form a laterally disposed flexible finger, and

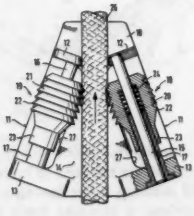
a raised nub arranged on said finger for grasping said slotted beam.

4,340,997

ROPE CLAMPING DEVICE COMPRISING TWO TOOTHED CLAMPING ELEMENTS ADAPTED TO BE PRESSED AGAINST THE ROPE

Gunther M. Voss, Ziegelstadel 10, 8918 Diessen, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 55,884
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1978, 2830429; Apr. 4, 1979, 2914992
Int. Cl.³ F16G *11/04;* B63B *21/04*
U.S. Cl. 24—115 L **21 Claims**



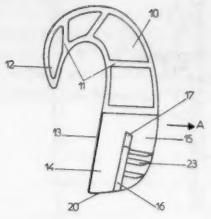
1. In a rope-clamping device having two opposing clamping elements with teeth and means mounting the clamping elements above a bearing surface for varying the distance therebetween to allow a rope to be inserted and removed and wherein the distance is reducible in response to a tensile force applied to the rope to press the clamping elements thereagainst, the improvement wherein the clamping elements comprise rollers having an axis of rotation and the mounting means comprises means mounting the rollers with their axes of rotation subtending an acute angle therebetween for free rotational movement around its axis and longitudinal displacement therealong to alter the distance therebetween.

4,340,998

HOOK FOR ELASTIC CABLE

Guy Liberge, Charbonnieres-les-Bains, France, assignor to Joubert S.A., France

Filed Mar. 10, 1980, Ser. No. 128,917
Claims priority, application France, Mar. 16, 1979, 79 07223
Int. Cl.³ F16G *11/00*
U.S. Cl. 24—130 **15 Claims**



1. A sandow comprising:

an elastic cable;

a monoblock mechanism including:

a hook,

a joint base plate integrally connected to said hook having interior and exterior parallel canals longitudinal with said base plate for holding the ends of said cable, said interior canal located in close proximity to the hook holding the stretched end of said cable, while said exterior canal holds the nonstretched free end of said cable,

a partitioned wall separating said interior and exterior canals, said wall having an upper and lower portion, with said upper portion including a V like profile gap whose point is directed away from said hook, and

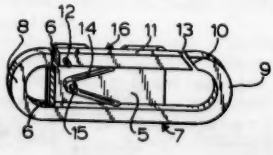
a means for maintaining said free end of said cable disposed in said exterior canal said means further located below the point of said V gap.

4,340,999

METAL CLASP

Mario Chini, Arezzo, Italy, assignor to Fratelli Chini Egidio & Mario S.N.C., Laterina, Italy

Filed Jul. 16, 1980, Ser. No. 169,342
Claims priority, application Italy, Jan. 18, 1980, 1205/79[U]
Int. Cl.³ A44B *13/02*
U.S. Cl. 24—241 P **7 Claims**



1. A metal jewelry clasp comprising:

an outer housing made of a single sheet of metal foil folded about a fold line at its center portion which is narrower relative to the remaining portion thereof so as to define a generally U-shaped housing having two opposed surface portions defining two opposite, lateral openings therebetween; and

a pair of cooperating clasp elements comprising a C-shaped element mounted in a fixed manner between said opposed surface portions of said U-shaped housing and disposed to

close one of said lateral openings and an elongated, spring-loaded latching bar pivotably mounted at one end thereof between said opposed surface portions of said U-shaped housing and disposed to normally extend generally between the ends of said C-shaped element and to normally close the other of said lateral openings.

4,341,000

METHOD OF CHARGING HEAT PIPE

Richard F. Stockman, Friendship, N.Y., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 24, 1980, Ser. No. 132,958
Int. Cl.³ B23P *15/26;* **F28D** *15/00*
U.S. Cl. 29—157.3 H **3 Claims**

1. The method of providing a heat pipe with an evacuated space above a vaporizable fluid comprising the steps of:

a. supplying the heat pipe with an inlet at the upper end and a valved outlet at the lower end thereof,

b. disposing an open-ended standpipe within said heat pipe at the lower end thereof, the standpipe connected at its lower end to said valved outlet and extending upwardly therefrom into the interior of the heat pipe,

c. with said valved outlet closed, injecting a quantity of vaporizable fluid into the interior of said heat pipe through said inlet and withdrawing a quantity of air displaced by said fluid so as to completely fill the interior with the vaporizable fluid,

d. closing the inlet to preclude the further passage of fluid therethrough, and

e. with the interior of the heat pipe completely fluid and the inlet closed, opening said outlet valve and withdrawing therethrough a portion of the vaporizable fluid from the heat pipe to provide an evacuated space lying above the fluid that remains in the heat pipe, the fluid being withdrawn from the interior of the heat pipe through the standpipe connected to said valved outlet thereby precluding evacuation below the upper end of the standpipe.

4,341,001

HUB FOR USE IN FLYWHEELS FOR KINETIC ENERGY STORAGE

Bruce E. Swartout, San Juan Capistrano, Calif., assignor to U.S. Flywheels, Inc., Irvine, Calif.

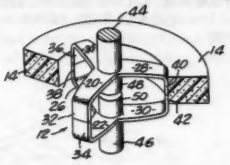
Division of Ser. No. 942,054, Sep. 13, 1978, abandoned. This application Aug. 11, 1980, Ser. No. 176,746
Int. Cl.³ B21K *1/40, 1/28;* **B60B** *9/26, 27/00*
U.S. Cl. 29—159.3 **5 Claims**

1. A method of fabricating a hub for use in conjunction with a rotating flywheel apparatus for storing kinetic energy, the method comprising the steps of:

interconnecting a pair of opposed, coaxial, convex surfaces of substantially equal dimensions, each such surface having an equal plurality of legs spaced equidistantly around the periphery thereof at locations corresponding to the locations of the legs of the opposing surface;

said legs of said respective convex surfaces abutting to form a plurality of arcuate radially outward facing surfaces for support of a cylindrical flywheel rim, the axis of which is collinear with the axes of said convex surfaces;

affixing an axle, coaxially, to each of said convex surfaces upon the outer face thereof; and



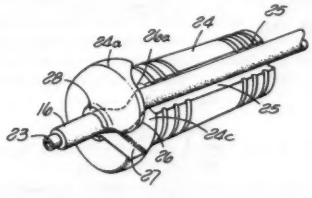
affixing a height limiting device, coaxially, to each of said convex surfaces upon the inner face thereof, wherein said devices are collinearly spaced from one another to form a gap of pre-selected length therebetween.

4,341,002

TOOL FOR FLEXIBLE TUBE INSTALLATION

Keyvan T. Diba, Los Angeles, Calif., assignor to Bio-Energy Systems, Inc., Ellenville, N.Y.

Filed Nov. 28, 1980, Ser. No. 211,407
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—235 **4 Claims**



1. A hand tool for radial installation of a flexible tube having rigid inner liner within a first predetermined length from a first end of said flexible tube, through an opening of circular cross-section in the wall of a rigid tube of larger size, comprising:

a generally cylindrical, elongated handle being a central axis;

a head portion integral with said handle at a first axial end thereof, said head portion comprising a flange of diameter greater than that of said handle and an axial bore substantially concentric with said central axis to a depth at least equal to the axial dimension of said flange, said bore being of a diameter at least equal to the outer diameter of said flexible tubing;

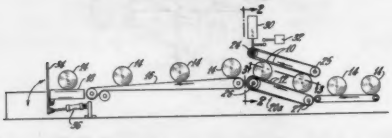
a surface groove extending over the axial length of said handle from the second end of said handle to said flange, said groove having a cross-sectional shape for containing said flexible tube laid therein;

first means within said flange comprising a shaped cut-away for leading said flexible tube laid axially in said handle surface groove generally radially inward into alignment with said bore in said head portion, said flexible tube protruding axially from said axial bore by an amount substantially equal to the length of said flexible tube to be inserted into said rigid tube.

4,341,003
METHOD AND APPARATUS FOR SEPARATING ROLLS OF WEB MATERIAL

David M. Kopena, Grand Rapids, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 4, 1980, Ser. No. 175,111
Int. Cl.[3] B23P *19/04*
U.S. Cl. 29—239 16 Claims



1. Apparatus for separating rolls of web material of the type in which two or more rolls are attached at the side edges thereof, wherein the improvement comprises:

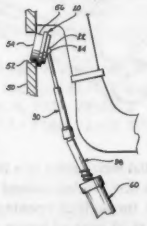
a first conveyor means having an upper and a lower conveyor defining a first path of travel for the first of said rolls; and

additional conveyor means for each roll attached to said first roll, each additional conveyor means having an upper and a lower conveyor defining a path of travel for an attached roll, each of said paths being vertically aligned at the inlet end of the conveyor, and each of said paths being sufficiently vertically separated from its immediately adjacent path at the outlet end of the conveyor, that the rolls passing therethrough are separated.

4,341,004
TOOL FOR INSTALLING FREEZE PLUGS

Charles R. Echols, 15841 N. 66th Ave., Glendale, Ariz. 85306

Filed Aug. 29, 1980, Ser. No. 182,837
Int. Cl.[3] B23P *19/04*
U.S. Cl. 29—275 4 Claims



1. A tool for seating a shrouded freeze plug in response to impact forces received from a source of impact forces, said tool comprising in combination:

(a) a disc member for imparting an impact force to the freeze plug to seat the freeze plug;

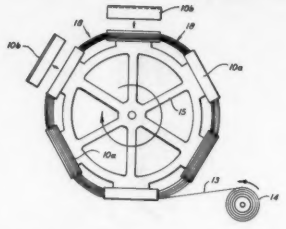
(b) a first circular land disposed on one side of said disc member for engaging the shroud of the freeze plug and a second circular land disposed upon another side of said disc member, said second circular land being sized different from said first circular land to accommodate a freeze plug sized differently than the freeze plug engageable by said first circular land; and

(c) means for interconnecting said member with the source of impact forces at any angle of interconnection within a cone of angles of interconnection and for transmitting the impact forces to the freeze plug to seat the freeze plug regardless of the angle of interconnection, said interconnecting and transmitting means comprising a first depression disposed within said first circular land, a second depression disposed within said second circular land and wherein said driver includes an end for mating with either of said first depression or said second depression.

4,341,005
MANUFACTURE OF HOLLOW FIBER FLUID FRACTIONATING CELLS

Rolf A. Oscarsson, Andover, Mass., assignor to Strimbeck, Davis & Soloway, Manchester, N.H., a part interest

Filed Nov. 6, 1980, Ser. No. 204,465
Int. Cl.[3] B23P *17/00, 3/00, 19/04*
U.S. Cl. 29—411 6 Claims



1. A method of making fluid fractionating cells the cores of which have a multiplicity of permeable hollow fibers contained within fluid tight casings, comprising the steps of:

(a) affixing a series of longitudinal sections of fractionating cell casings to the periphery of a winding means having a central axis of rotation;

(b) winding filaments of said hollow fiber over and onto said longitudinal sections on said periphery and building up a bundle thereof in each section;

(c) assembling another of said longitudinal sections about said bundles in each section and forming a cell core firmly holding the fibers in place in said bundle;

(d) severing the fibers between each cell core and removing the cell cores from said winding means;

(e) potting said fibers at each end of a cell core by introducing a liquid potting compound thereabout and centrifugally casting the potting compound in each end in situ by rotating said cell core about a transverse axis of rotation thereof;

(f) cutting the ends of the fibers at each said end in the area of said potting compound and laying open the cores thereof; and

(g) placing an endcap on each end so potted to complete said cells.

4. A method of making fluid fractionating cells which cells have a multiplicity of generally parallel laid permeable hollow fibers contained within fluid tight casings, comprising the steps of:

(a) preparing a series of longitudinal sections of fractionating cell casings each section of which comprises at least two abutting relatively straight side walls of a cell;

(b) affixing said series of longitudinal sections to the periphery of a winding means having a central axis of rotation with one wall of said side walls being tangential to said periphery and the other facing outwardly and with the outwardly facing side walls alternating from one side to the other from longitudinal section to longitudinal section about said periphery;

(c) winding filaments of said hollow fiber over and onto said longitudinal sections on said periphery keeping said filaments within said outwardly facing side walls, and building up a bundle thereof in each said longitudinal section;

(d) assembling another of said longitudinal sections over each section so filled with said hollow fiber and forming a cell core;

(e) cutting the fiber bundle between each such cell core on said winding means and freeing the cell core;

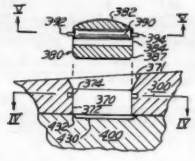
(f) potting said hollow fibers at each end of said cell cores by centrifugal casting a limited amount of liquid potting compound in each end in situ about said courses by spinning said cell cores about a transverse axis of revolution;
(g) cutting the ends of the fibers at each said end in the area of said potting compound and laying open the cores thereof; and
(h) placing an endcap on each end so potted to complete said cells.

4,341,006

CHUCK ASSEMBLY AND COLLET

John C. Staron, Melrose Park, Ill., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 2,119, Jan. 9, 1979, abandoned. This application Sep. 10, 1979, Ser. No. 73,986
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—434 **1 Claim**



1. A method of making a collet for retaining a tool against axial pullout, the steps of the method comprising:
providing a tool locking pin and a radially-resilient collet body having a central tool-receiving bore and an outer surface;
forming a radial aperture extending through the collet body of suitable size and shape for receiving the pin;
making an undercut in at least a portion of the radial collet aperture to provide a larger dimensioned portion intermediate the bore and the outer surface, said undercut extending partially toward, but not communicating with, the outer surface of the collet;
forming a hole extending transversely through the pin;
mounting a spring bar within the hole in the pin, said spring bar being smaller than the hole in the pin to allow the pin to move toward and away from the central tool-receiving bore of the collet;
compressing the spring bar to a length less than the size of the radial aperture;
inserting the pin and the compressed spring bar into the radial aperture; and
aligning the compressed spring bar with the undercut to allow the spring bar to expand into the undercut and thereby retain the pin in the aperture.

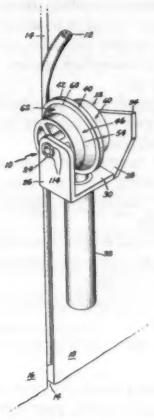
4,341,007

METHOD OF ROLLER INSERTING FILLER MATERIAL IN CREVICES

Edward G. Kruszona, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 974,193, Dec. 26, 1978, abandoned, which is a division of Ser. No. 797,972, May 18, 1977, Pat. No. 4,169,305. This application Sep. 29, 1980, Ser. No. 192,121
Int. Cl.³ B23P *11/02*
U.S. Cl. 29—451 **4 Claims**

1. A process for inserting filler material to the proper depth in a crevice comprising rolling filler materials in a crevice with a roller comprising (a) a circular structure having a central circular section being at least 1/16 of an inch, but less than ¼ of an inch thick, a first and second truncated right angle cone section of a smaller diameter than said central section and appended on each side of said circular section where the bases of said truncated cone sections are adjacent to the central section and a third and fourth circular section of uniform thickness appended to the truncated part of said cone sections and having a diameter which is as large as the diameter of cones at their truncated sides and having a thickness of at least 1/16 of an inch wherein the center lines of said central section, said truncated cone sections and said third and fourth circular sections coinside and wherein said circular section is symmetrical on either side of the center lines passing through said central circular section, (b) a shaft passing through an opening in said circular structure so as to support said circular structure and allowing it to rotate, the axis of said shaft being coincident with the axis of said circular structure; (c) two support members supporting said shaft on both sides of said circular structure and allowing said circular structure to rotate about said shaft and (d) a base plate connected to said support members, such that circular structure is free to rotate and being supported by said support members and said base plate.

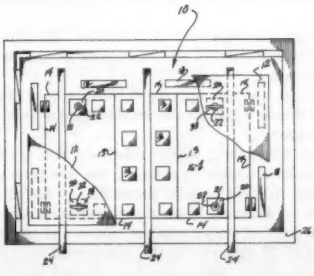


4,341,008

METHOD OF REGISTERING A STEEL RULE DIE AND COUNTERPLATE

Herman A. Graboyes, Mishawaka, and Frank D. Helman, Elkhart, both of Ind., assignors to Atlas Steel Rule Die, Inc., Elkhart, Ind.

Filed Dec. 29, 1980, Ser. No. 220,373
Int. Cl.³ B23Q *3/00*
U.S. Cl. 29—467 **2 Claims**



1. In a reciprocating cutter utilizing a steel rule die and cooperating counterplate, said die including a body, a plurality of rules protruding from said body, said counterplate having a plurality of grooves, said die and counterplate having a plural-

ity of alignable openings formed therein, said counterplate grooves being aligned with said die rules when said die and counterplate openings are aligned, a handled pin insertable through each aligned opening in said die and counterplate whereby said counterplate groove will be maintained with alignment with said die rules, the method of registering said die and counterplate within said cutter comprising the steps of:

a. securing adhesive support pads upon said die about the rules thereof,

b. supporting said counterplate above said die with said die and counterplate openings in alignment,

c. inserting said handled pins into said aligned openings for securing said counterplate against transverse movement relative to said die,

d. pressing said counterplate into binding contact with said support pads with said handled pins remaining inserted into said aligned openings,

e. removing each handled pin from said aligned openings,

f. inserting a locating pin into each aligned opening after removal of the handled pin therefrom to form a die and counterplate unit,

g. placing said die and counterplate unit between reciprocable platens of said cutter and securing each die and counterplate to a platen, and

h. separating said counterplate and die and removing said support pads.

4,341,009

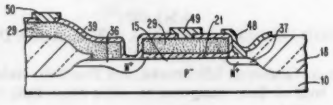
METHOD FOR MAKING AN ELECTRICAL CONTACT TO A SILICON SUBSTRATE THROUGH A RELATIVELY THIN LAYER OF SILICON DIOXIDE ON THE SURFACE OF THE SUBSTRATE

Robert F. Bartholomew, Poughkeepsie, N.Y.; Paul L. Garbarino, Ridgefield, Conn.; James R. Gardiner, Wappingers Falls, N.Y.; Martin Revitz, Poughkeepsie, N.Y., and Joseph F. Shepard, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 5, 1980, Ser. No. 213,526

Int. Cl.³ 148 *187;* H01L *21/285*

U.S. Cl. 29—571 **11 Claims**



1. A method of making at least one electrical contact to a substrate of silicon having a relatively thin layer of silicon dioxide on a surface to which the electrical contact is to be made through the relatively thin layer of silicon dioxide including:

forming a thin layer of polycrystalline silicon over the relatively thin layer of silicon dioxide on the surface of the substrate;

forming at least one opening in the thin layer of polycrystalline silicon where an electrical contact is to be made to the substrate;

etching an opening in the relatively thin layer of silicon dioxide through the opening in the thin layer of polycrystalline silicon to expose the surface of the substrate;

depositing a second layer of polycrystalline silicon over the thin layer of polycrystalline silicon and the exposed surface of the substrate so that the second layer of polycrystalline silicon makes electrical contact with the exposed surface of the substrate through the opening in the relatively thin layer of silicon dioxide;

and doping at least the second layer of polycrystalline silicon to the opposite conductivity of the conductivity of the substrate to provide conductivity thereto so that it can function as an electrical contact to the exposed surface of the substrate.

4,341,010

FABRICATION OF ELECTROLUMINESCENT SEMICONDUCTOR DEVICE UTILIZING SELECTIVE ETCHING AND EPITAXIAL DEPOSITION

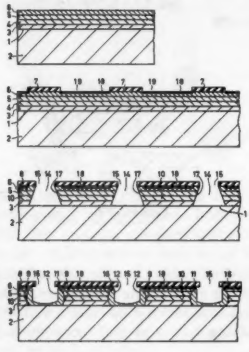
Rudolf P. Tijburg, and Teunis van Dongen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,511

Claims priority, application Netherlands, Apr. 24, 1979, 7903197

Int. Cl.³ H01L *21/308, 21/20*

U.S. Cl. 29—580 **6 Claims**



1. A method of manufacturing a semiconductor laser device, which comprises:

providing a semiconductor substrate having a major surface;

growing a plurality of monocrystalline epitaxial layers, including an active layer, on said major surface;

providing an etching mask on top of said monocrystalline epitaxial layers;

etching the masked monocrystalline epitaxial layers to form a plurality of epitaxial layer segments having nonplanar mirror surfaces which bound segments of said active layer in the lateral direction; and

then growing epitaxial monocrystalline protective layers having substantially planar and parallel surfaces on said nonplanar mirror surfaces from the gaseous phase.

4,341,011

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

Sadao Okano, and Hideo Homma, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 3, 1980, Ser. No. 193,456

Claims priority, application Japan, Oct. 5, 1979, 54/127966

Int. Cl.³ H01L *21/92*

U.S. Cl. 29—590 **10 Claims**

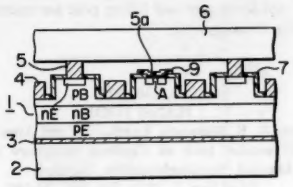
1. A method of manufacturing a semiconductor device comprising the steps of:

(a) preparing a semiconductor substrate which includes at least three semiconductor layers of alternately different conductivity types and in which one of said semiconductor layers is exposed in a main surface of the substrate and is divided into a plurality of respectively independent regions, at least one of said plural regions having a defect therein;

(b) depositing electrode films on exposed surfaces of said plural regions respectively; and

(c) removing a substantial partial portion of said electrode film, including the whole of a top surface layer thereof,

deposited on a region having a defect, among said plural regions in said semiconductor substrate, so that said region



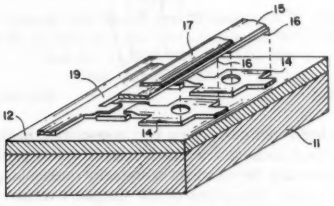
having a defect is remained covered with an unremoved layer of said electrode film, thereby lowering the surface level of said electrode film relative to that of the others.

4,341,012

PYROELECTRIC DETECTOR ARRAYS

Archibald L. Fripp, Williamsburg; James B. Robertson, and Roger A. Breckenridge, both of Yorktown, all of Va., assignors to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 29, 1980, Ser. No. 191,748
Int. Cl.³ H01C *17/06*
U.S. Cl. 29—620 **7 Claims**



1. A method for mounting a pyroelectric detector array on silicon integrated circuits comprising the steps of:
forming a silicon dioxide layer on a silicon substrate;
forming a series of holes in said silicon dioxide layer;
coating said silicon dioxide layer with a series of nontouching strips of soft metal with each strip being over and around one of said holes, wherein each strip is the output terminal for a pyroelectric detector;
coating one side of a pyroelectric detector strip with a series of strips of soft metal;
mounting said pyroelectric detector strip over said series of holes such that said series of strips of soft metal on said detector strips are in contact with said series of strips on said silicon dioxide layers; and
forming a metal layer on the side opposite said one side of said pyroelectric detector strip to provide a ground connection for the pyroelectric detector array.

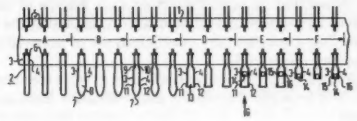
4,341,013

METHOD FOR ATTACHING AND SECURING POWER SUPPLY WIRES TO ELECTRICAL COMPONENTS

Erich Haidinger, Deutschlandsberg, Austria, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 10, 1980, Ser. No. 195,945
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948319
Int. Cl.³ H01G *7/00;* **H01R** *43/00;* **H05K** *13/00*
U.S. Cl. 29—854 **4 Claims**

1. A method for attaching and securing power supply leads aligned parallel to one another to opposite lateral surfaces of electrical components, comprising the steps of:
(a) continuously inserting one-piece U-shaped power supply leads into slots of a band-shaped transport carrier of an automatically functioning assembly system, the power supply leads comprising two parallel legs and a U-shaped portion coplanar with the legs, the U-shaped portion projecting laterally beyond an edge of the transport carrier;
(b) bending the U-shaped portion downwardly out of the plane of said legs so as to form a connection bow to permit



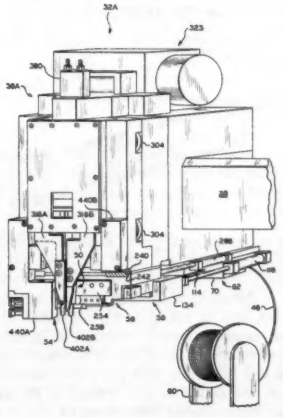
insertion of a component between the two legs in a direction substantially parallel to the two legs and the plane of the transport carrier without influence from the connection bow;
(c) inserting the components between the power supply leads formed by the two parallel legs in a direction substantially parallel to the two legs and soldering the leads to opposing component surfaces;
(d) removing the connection bow in a proximity of the component; and
(e) completing processing of the components.

4,341,014

METHOD AND APPARATUS FOR INTERCONNECTING PAIRS OF TERMINALS WITH A PRETWISTED PAIR OF INSULATED WIRES

Fred W. Loy, Whitehall, and Robert B. Senior, Grand Haven, both of Mich., assignors to Cooper Industries, Inc., Houston, Tex.

Filed May 7, 1980, Ser. No. 147,370
Int. Cl.³ H01R *43/00;* **B23P** *19/00*
U.S. Cl. 29—857 **44 Claims**



1. An apparatus for interconnecting first and second groups of terminals with a twisted set of wires comprising, in combination,
first means for supplying such wires and securing one end of each wire of such set of wires to a terminal of such first group of terminals,
second means for receiving and securing the other end of

each wire of such set of wires to a terminal of such second group of terminals,

said first and said second means each including

means for biaxially and bi-directionally translating said first and said second means,

means for untwisting an end adjacent portion of such twisted set of wires,

means for identifying at least all but one of said wires, and

means for removing insulation from a length of each of such wires of such set,

means for directing such identified wires to said securing means.

36. A method of interconnecting two groups of terminals with a set of pretwisted insulated wires comprising the steps of

providing a substantially continuous set of pretwisted wires having a free end,

gripping such set of pretwisted wires at such free end and at a first location disposed a finite distance from such free end,

routing such set of wires between a first group of terminals and a second group of terminals,

gripping such set of pretwisted wires at a second location disposed a finite distance from such first location,

gripping and severing such set of pretwisted wires at a third location disposed a finite distance from such second location,

providing tension to such length of wire disposed between such gripped free end and such first location, and such length of wire disposed between such second location and such third location,

untwisting such wires disposed between such gripped free end and such first location and such wires disposed between such second location and such third location,

removing an end adjacent portion of insulation from each wire of such set of wires,

identifying at least all but one of such set of wires adjacent such free end and such severed end, and securing each end of such wires of such set of wires to one terminal of such groups of terminals.

4,341,015

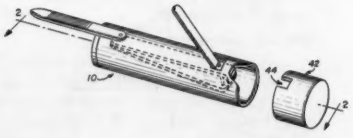
NAIL CLIPPER ASSEMBLY

Patrick Young, 4055 Bismark Dr., San Jose, Calif. 95130

Filed Sep. 18, 1981, Ser. No. 303,205

Int. Cl.³ A45D *29/02*

U.S. Cl. 30—28 **8 Claims**



1. A clipper assembly for clipping nails having an upper and a lower blade arm with a jaw blade at a first end of each, a lifting post and a lever arm wherein the lower blade arm is rigidly joined to the upper blade arm at a second end opposite of the jaw blades, and the lifting post is connected to the lower blade arm and extends upward through an aperture in the upper blade arm where the lever arm is pivotally connected to the lifting post and said lever arm can rotate about the axis of said lifting post and about an axis normal to the axis of said lifting post, the improvement comprising of

a flexible housing having a first and second end of inside cross-sectional dimension exceeding the widest dimension of said blade arms and a longitudinal dimension exceeding the length of said blade arms, the housing being positioned about said upper and lower blade arms;

a ridged blade pivotally connected to said blade arms by a fastener post extending through said blade arms about said second end and the flexible housing near said second end; the ridged blade being positioned about the exterior of the housing; and

an opening in the flexible housing near said first end such that said lever arm and lifting post are uncovered by the flexible housing.

4,341,016

HAND TOOLS

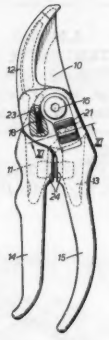
Christopher R. B. Harrison, Porthcawl, and Alan K. Pittaway, High Wycombe, both of England, assignors to Wilkinson Sword Limited, Buckinghamshire, England

Filed Sep. 7, 1979, Ser. No. 73,444

Claims priority, application United Kingdom, Sep. 9, 1978, 36250/78

Int. Cl.³ B26B *13/00*

U.S. Cl. 30—262 **8 Claims**



1. A hand tool comprising two cooperating members, two handles each secured to a separate one of said members, means interconnecting the members in mutually overlapping relationship to permit movement of the members relatively to one another by said handles, one said member having a slot therein, the other member having a recess therein, and a catch pin movable within said slot into engagement with said recess to lock the members together, characterised in that the catch pin forms part of a catch unit comprising a mounting plate having an elongate slot therein, a catch button slidable on one side of the mounting plate, a spring plate slidable on the mounting plate in sprung engagement therewith on the opposite side to the catch button, and means extending through said elongate slot and securing the catch button to said spring plate, said catch unit being mounted on said one member, and said catch pin being in permanent engagement with said catch button.

4,341,017

TREE-PRUNING AND CLEARING APPARATUS

Jerzy Janczak, S:t Mickelsgatan 71, S-126 54 Hägersten, Sweden

Filed May 1, 1981, Ser. No. 259,781

Claims priority, application Sweden, May 14, 1980, 8003659

Int. Cl.³ B27B *17/02, 17/08*

U.S. Cl. 30—381 **14 Claims**

1. A saw equipment, especially for pruning of trees and clearing work, comprising a guide bar mounted on a handle and provided with a saw chain driven by a hydraulic motor arranged at the end of the handle, a portable hydraulic pump separated from the handle and directly driven by an internal combustion engine coupled to the hydraulic pump such that the flow discharged from the pump and supplied to the hydraulic motor is controlled solely by the speed of the engine, and an oil cooler receiving return oil from the hydraulic motor

and from which cooler oil is supplied to the hydraulic pump, said hydraulic motor being connected to the hydraulic pump

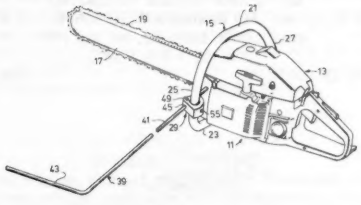
and the oil cooler, respectively, via hydraulic lines arranged in the handle.

4,341,018

WORK LENGTH GAUGE ATTACHMENT FOR CHAIN SAWS

James F. Nelson, 263 Euclid Ave., Kenmore, N.Y. 14217, and Robert W. Nelson, 36 Lake Ave., Lancaster, N.Y. 14086

Filed Jul. 7, 1980, Ser. No. 166,542
Int. Cl.³ B27B *17/00*
U.S. Cl. 30—383 **5 Claims**



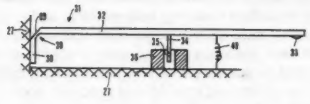
1. A gauge attachment for a chain saw, suitable for attachment to transverse, vertical and longitudinal handles or handle portions of chain saws and to which a work length gauge which is a rod, tube or wire is fastenable in such position that with respect to such chain saw handles or portions thereof, when the attachment is attached thereto and the gauge is fastened to it, the gauge extends transversely with respect to the saw chain, which comprises a body portion which includes a substantially teardrop shaped opening through it, rounded on one end and converging toward a point at the other end, with a threaded opening at the rounded end to accommodate a set screw, a set screw for screwing into said opening to bear against a chain saw handle or handle portion so as to hold the attachment in desired position thereon, a plurality of openings in the attachment body suitable for selective insertion of the work length gauge and for holding it in desired gauging position, said openings being walled passageways through the body portion of the article, and having threaded portions coplanar and intersecting at right angles, and set screws for screwing in the threaded passageway portions for holding the gauge in place in one of such passageways when the corresponding screw is tightened.

4,341,019

GAUGE FOR CHECKING LINEAR DIMENSIONS

Mario Possati, Bologna, Italy, assignor to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Filed Jul. 22, 1980, Ser. No. 171,159
Claims priority, application Italy, Jul. 24, 1979, 3463 A/79
Int. Cl.³ G01B *7/00*
U.S. Cl. 33—172 E **18 Claims**



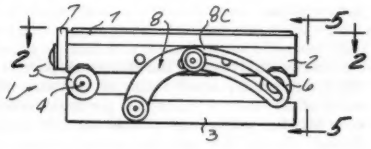
1. A gauge for checking linear dimensions, including: a support; fulcrum means carried by the support; an arm associated with the fulcrum means and movable with respect to the support; a probe associated with the movable arm in order to transmit to the arm measurement displacements; and transducer means for providing a signal depending on the position of the movable arm; the fulcrum means including an element with a lightened section that is resiliently flexible for defining a geometrical axis of rotation, the element including a first and a second portion and a joining portion between the first and the second portion, wherein the joining portion is bent and has at its convex side a chamfer adapted to locally reduce the thickness of the joining portion, in order to define the lightened section.

4,341,020

PRECISION TOOLS AND PRECISION TOOL SETS, AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Donald H. Bailey, Bloomfield Hills, Mich., assignor to Suburban Tool, Inc., Birmingham, Mich.

Filed Feb. 22, 1980, Ser. No. 123,835
Int. Cl.³ B23Q *3/00*
U.S. Cl. 33—174 TA **29 Claims**



1. A precision tool set, comprising:

(a) a sine plate including a top plate hingedly connected to a bottom plate, the top plate having a plurality of particularly dimensioned apertures formed therein according to a predetermined pattern;

(b) at least a pair of side rails removably secured to the top plate and each being movable between an upper, operative position and a lower, inoperative position, the side rails projecting above the upper surface of the top plate when in their operative position;

(c) a plurality of individual precision tools, each adapted to be removably mountable onto the top plate, each tool being interchangeable with any other tool, each tool having a plurality of particularly dimensioned apertures formed therein according to a predetermined pattern;

(d) a fastener for removably mounting a precision tool onto the top plate, and

(e) wherein when at least one precision tool is brought into abutment with the side rails, when in their operative position, (1) at least one aperture formed in the at least one tool will align and mate with at least one aperture formed in the top plate, the fastener being projectible through the

mating apertures to enable removable mounting and (2) the at least one tool is precisely squared and paralleled.

22. A precision tool set comprising:

a plurality of separate precision tools, each adapted for individual use in precisely orienting and securing a workpiece thereon;

each said separate precision tool of said precision tool set being provided with a plurality of mating apertures;

said plurality of mating apertures of each said precision tool being particularly dimensioned and particularly arranged so as to define a mating hole pattern; and

said mating hole pattern defined by said mating apertures of each said precision tool of said precision tool set being adapted to permit selective and interchangeable interconnection of desired ones of said precision tools by means of fastening members received through relative cooperating mating apertures of desired ones of said precision tools;

one of said plurality of separate tools comprising a sine plate which includes a top plate hingedly connected to a bottom plate;

said plurality of mating apertures being provided in said top plate of said sine plate; and

said sine plate being provided with a locking strap;

said locking strap being formed so as to be substantially flat, with a substantially constant width and thickness, and having a predetermined arcuate configuration;

said locking strap being affixed at a portion thereof to a side of said bottom plate of said sine plate, and at a portion thereof to a matching side of said sine plate immediately adjacent the top surface of the upper plate, so as to permit selective pivotal movement of said top plate relative to said bottom plate;

said predetermined arcuate configuration of said locking strap being such that the locking strap never rises above the planar upper surface of said top plate of said sine plate, regardless of the angular position of said top plate relative to said bottom plate.

27. A locking strap for a precision tool, comprising:

a substantially flat body having a substantially constant width and thickness and a predetermined arcuate configuration;

a first end portion of said locking strap being provided with a through hole, and an arcuate elongated slot extending from substantially a central portion of said strap to a portion of said strap adjacent a second end thereof; and

the radius of curvature of said locking strap varying substantially along the length thereof such that the arcuate portion between said first end and said central portion thereof has a substantially lesser radius of curvature than the radius of curvature of the arcuate portion of said locking strap between said central portion and said second end thereof.

4,341,021

WHEEL ALIGNMENT MEASURING APPARATUS

Osmond Beissbarth, Sulzbacher Str. 15, 8000 Munich 40, Fed. Rep. of Germany

Filed Aug. 22, 1980, Ser. No. 180,240

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934411; Jun. 12, 1980, 3022071

Int. Cl.³ G01B 5/255

U.S. Cl. 33—203.18 **19 Claims**

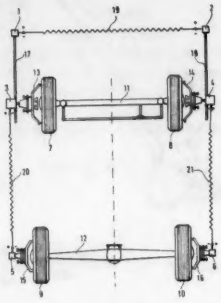
1. A wheel alignment measuring apparatus designed for measuring wheel alignment angles of a vehicle having front and rear wheels and comprising:

six angle measuring units,

first and second said angle measuring units adapted for connection respectively to the left and right front wheels of the vehicle and including angle pickup means for measuring and producing signals indicating the total tracking angles of both front wheels,

third and fifth said angle measuring units adapted for connection respectively to the left front wheel and a left rear wheel and including angle pickup means for measuring and producing signals indicating the angles of these wheels,

and fourth and sixth said angle measuring units adapted for connection respectively to the right front wheel and a right rear wheel and including angle pickup means for measuring and producing signals indicating the angles of these wheels,



means rigidly joining the first said angle measuring unit with said third angle measuring unit

means rigidly joining said second angle measuring unit with said fourth angle measuring unit, and

an electrical circuit means for receiving signals from said angle pickup means and for producing a reading for wheel alignment data from the angles measured by said angle measuring units.

4,341,022

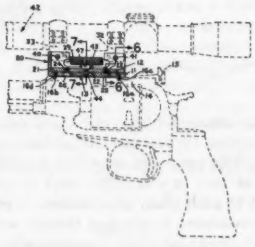
DETACHABLE ZERO-SET SCOPE MOUNT FOR HAND GUNS AND OTHER FIREARMS

Arnold D. Santoro, 419 Brookside Pl., Cranford, N.J. 07016

Filed Oct. 8, 1980, Ser. No. 195,171

Int. Cl.³ F41G 1/38

U.S. Cl. 33—245 **16 Claims**



1. A detachable zero-set scope mount assembly for use on hand guns having a barrel and an upper supporting surface and other like firearms comprising,

a. a base plate means having an upper surface, and a lower surface adapted to fit the upper supporting surface of the associated hand gun,

b. means for connecting the base plate means to the upper supporting surface to precisely align the longitudinal center line thereof with the center line of the barrel of the associated hand gun,

c. said base plate means having at least one tapered guide opening in the upper surface disposed in predetermined spaced relation to the connecting means and to the center line of the base plate means, and threaded bore means at the

mid point of the longitudinal center line of said base plate means,

d. scope bracket assembly means having, a lower surface, and a depending tapered projection, in said lower surface, and

e. detachable means disposed to engage the scope bracket assembly means and to so connect and to reconnect the same into the threaded bore of the base plate means that the lower surface of the scope bracket assembly means and the depending tapered projection are in precise alignment with the upper surface of the base plate means and the at least one tapered guide opening.

9. In a detachable zero-set scope mount assembly for hand guns and other firearms wherein said hand guns and other firearms have a frame and standard sights on said frames in the longitudinal line of sight for the given firearm, the combination therewith of;

a. sized base plate means having, a generally upper planar surface, and a lower surface to fit the frame of the given firearm so as not to interfere with the normal use of the standard sights thereon,

b. said base plate means including, a centrally disposed threaded bore, and at least one tapered guide opening disposed in the upper surface thereof for precise alignment relative the threaded bore,

c. connector means for connecting the center line of said base plate means in the longitudinal line of said firearm,

d. scope bracket assembly means having, bracket means for connecting a scope thereon, and a generally planar lower surface to fit the upper surface of the base plate in assembled position thereon,

e. said scope bracket assembly means having an opening extending therethrough and at least one tapered projection formed on said lower planar face of the scope bracket assembly means so that in assembled position, said opening is in alignment with the threaded bore in said base plate means and the depending tapered projection is matched, aligned and mated to the at least one tapered guide opening in the base plate means, and

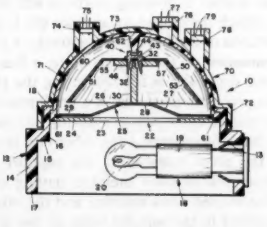
f. detachable connecting means in engagement with the scope bracket assembly means and extending through the opening therein for detachable engagement with the threaded bore in the base plate means to connect and reconnect the scope bracket assembly means to the base plate means for use in connection with the operation of the associated firearm and to permit easy removal thereof from the firearm.

4,341,023

DIGITAL COMPASS

Konrad H. Marcus, Holland, and Robert D. Hochreiter, Saugatuck, both of Mich., assignors to Prince Corporation, Holland, Mich.

Filed Jan. 25, 1980, Ser. No. 115,218
Int. Cl.³ G01C *17/26*
U.S. Cl. 33—363 K **7 Claims**



1. A magnetically responsive sensor for use in a compass system for a vehicle comprising:

a base;

a light source mounted to said base;

a cup-shaped opaque encoder disc including a permanent magnet, said disc freely and rotatably mounted to said base so as to move with respect thereto permitting alignment with a magnetic field, said disc including a plurality of slots permitting the selective transmission of light through said disc as a function of the position of said disc with respect to said base;

an opaque diffusion cover including a hemispherical recess for enclosing said encoder disc, said diffusion cover mounted to said base and including a plurality of recessed apertures defining receptacles for receiving a plurality of light detectors, said receptacles positioned opposite one side of said encoder disc and said light source positioned opposite the other side of said encoder disc;

circuit means coupled to said light detectors for providing direction indicating signals in response to the sensing of light by said light detectors; and

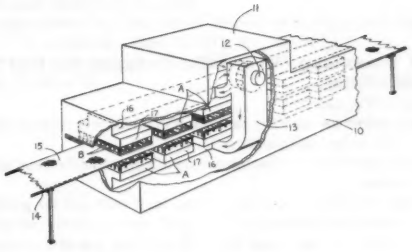
display means coupled to said circuit means and responsive to signals therefrom for displaying the direction of orientation of said disc with respect to said base.

4,341,024

TUBE DRYER ASSEMBLY

Philip M. Witkin, 110 Lowood La., Greenville, S.C. 29605

Filed Jul. 14, 1980, Ser. No. 168,535
Int. Cl.³ F26B *13/02*
U.S. Cl. 34—155 **3 Claims**



1. For use in an elongated oven and the like for subjecting flat material moving therethrough on conveyor means to the action of heated air;

an improved tube assembly comprising:

a pair of plenums spaced vertically with said flat material on conveyor means moving therebetween;

a plurality of longitudinally spaced rows of transversely spaced tubes of substantially equal length extending from said plenums for carrying heated air from the plenums inwardly toward said conveyor means;

said tubes having connection on one end thereof with a respective plenum for receiving heated air and extending outwardly thereof toward said flat material;

a plurality of longitudinally spaced inverted channel-shaped members having web portions with transversely spaced openings therein for accommodating and securing said tubes adjacent an open discharge end, opposite said one end, of said tubes therein for discharging heated air from the tubes of substantially equal length therethrough against said flat material, said plurality of longitudinally spaced inverted channel-shaped members providing spaced openings to accomodate airflow between said channel-shaped members, and said tubes being substantially unsupported between said connection on said one end and said channel-shaped members on said open discharge end of said tubes; and

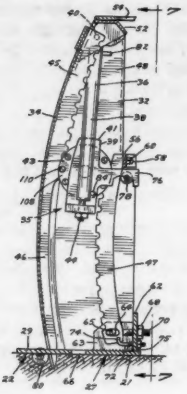
marginal longitudinal stiffener members interconnecting end portions of said channel-shaped members.

4,341,025

POWER DRIVE FOR TREE TRANSPLANTING SPOONS

Walbert A. Stocker, 301 Sunset Dr., Jordan, Minn. 55352

Filed Feb. 9, 1981, Ser. No. 232,438
Int. Cl.[3] A01G *23/06*
U.S. Cl. 37—2 R 11 Claims



1. In association with a machine for digging trees from the earth including:

(a) a ring stand;

(b) means for situating said stand in encircling relation to a tree to be transplanted;

(c) a plurality of stanchions extending upwardly from said stand;

(d) a plurality of digging spoons, each mounted for guided movement with respect to one of said stanchions and with respect to said stand between an upper position situated out of the earth is substantially parallel alignment with its stanchion, and a lower position wherein its lowermost portion meets with the lowermost portions of the other spoons when in said lower position;

(e) guide means on each of said stanchions for guiding the path of each of said digging spoons as it moves between its upper and lower positions;

(f) power digging means including a pinion for selectively moving each spoon between said upper and lower position, the improvement wherein said guide means includes:

(1) a pair of digging spoon guide tracks adjustably mounted with respect to each stanchion and each extending outwardly therefrom in an opposite direction from the other to lie in a surface perpendicular to a plane normal to the axis of said pinion;

(2) a pair of upper digging spoon guide wheels rotatably mounted on opposite upper edge portions of each of said digging spoons in position to encompass said guide tracks between outer edge portions of said digging spoons and said upper digging spoon guide wheels; and

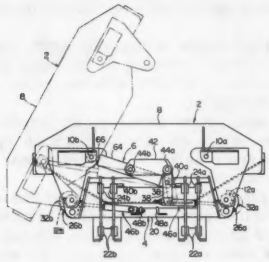
(3) a force bearing roller permanently but rotatably mounted with respect to the ring stand in position to contact an outside face portion of the digging spoon opposite the digging spoon rack and to limit and precisely determine the position of that portion of the digging spoon in contact with it whenever the spoon is moving up or down or is being lifted under a tree transplanting load.

4,341,026

BUCKET ASSEMBLY FOR EARTHMOVING MACHINES CAPABLE OF SIDE DUMPING AS WELL

Tomio Uchida, Ebetsu, and Kisaburo Otabe, Isehara, both of Japan, assignors to Caterpillar Mitsubishi Ltd. and Hokkaido Construction Equipment Sales, Ltd., both of, Japan

Filed Nov. 3, 1980, Ser. No. 203,722
Claims priority, application Japan, Nov. 30, 1979, 54-154425; Sep. 24, 1980, 55-131599
Int. Cl.[3] E02F *3/76*
U.S. Cl. 37—117.5 8 Claims



1. In a bucket assembly for earth moving machines which is capable of side dumping as well and comprises a bucket, a bucket support and a hydraulic cylinder mechanism having a cylinder and a rod and interposed between the bucket and the bucket support, the improvement;

wherein the bucket includes a bucket body, a first receiving portion and a second receiving portion provided at opposite upper side portions of the rear surface of the bucket body, and a first support portion and a second support portion provided at opposite lower side portions of the rear surface of the bucket body and having a first pivot pin and a second pivot pin extending nearly at right angles to the widthwise direction of the bucket body;

wherein the bucket support comprises a support body to be mounted on lift arms and tilt links of an earthmoving machine, a first supporting portion and a second supporting portion provided in the support body for receiving the first and second support portions of the bucket respectively from above and supporting them therein, a first hook member and a second hook member mounted such that they pivot between an operating position at which they respectively come into engagement with the first and second support portions of the bucket to hold the first and second support portions in the first and second supporting portions and an inoperative position at which they move away from the first and second support portions of the bucket respectively, a pivot member pivotably mounted on the support body, a first stop surface and a second stop surface for restricting the pivotal movement of the pivot member within a predetermined range, a first power transmission member having one end connected to the first hook member and the other end selectively connected to the pivot member or the support body, and a second power transmission member having one end connected to the second hook member and the other end selectively connected to the support body or the pivot member; and

wherein one of the cylinder and the rod of the hydraulic cylinder mechanism is pivotably connected selectively to either the second or first receiving portion of the bucket, and the other of the cylinder and the rod of the hydraulic cylinder mechanism is pivotably connected to the pivot member.

4,341,027

SNOW TREATMENT APPARATUS FOR GROOMING SKIING SLOPES, TRAILS OR THE LIKE AND A METHOD OF OPERATING SAME

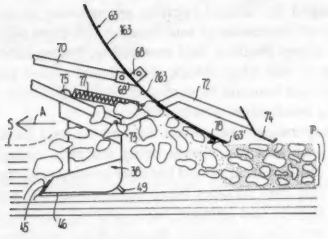
Karl Rohner, Herisau, Switzerland, assignor to Kempf & Co. AG Förder- und Lagertechnik, Herisau, Switzerland

Filed Oct. 28, 1980, Ser. No. 201,622

Claims priority, application Switzerland, Nov. 6, 1979, 9949/79

Int. Cl.³ E01H *4/00*

U.S. Cl. 37—197 **23 Claims**



1. A snow treatment apparatus for grooming skiing trails, slopes or the like as the apparatus travels on the treated surface, with at least one trailing scraper member freely swingable in a vertical plane, said scraper member including a scraper blade and a normally downwardly facing scraper base adjacent to the former and disposed at an acute angle relative to same, the angle of the scraper base relative to the treated snow surface being adjustable from a working position in which the scraper member scrapes snow off the surface, to a sliding position, in which the scraper base slides on the treated surface, a scoop being associated with the scraper member and being limited by two upright side walls parallel with the direction of travel of the apparatus, and by at least one shield adapted to be lowered towards and lifted away from the scraper member by means of at least one lifting arm in order to collect within the scoop the snow removed by the scraper member, to transport same and then to discharge same; wherein the shield is arcuately curved about a generally horizontal axis extending transversely of the direction of travel of the apparatus, whereby the shield has a convex face and a concave face, said shield being adapted for securement to the respective arm in selective fashion either with its concave or with its convex face turned in the direction of travel of the apparatus.

4,341,028

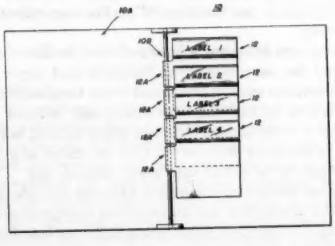
VISIBLE INFORMATION MANAGEMENT SYSTEM

Keith Brown, 8116 Kenova La., Springfield, Va. 22153

Filed May 5, 1981, Ser. No. 260,753

Int. Cl.³ G09F *19/00*

U.S. Cl. 40—534 **6 Claims**



1. A visible information management system adapted to firmly hold a plurality of cards therein and to enable the easy removal of said cards therefrom for replacement thereof, comprising:

a plurality of pressure clip means for holding the respective cards therein, each of the pressure clip means including,

a back side surface for providing a support surface for one of said cards held by the pressure clip means,

an overlapping means integrally connected to said back side surface along a top edge thereof for receiving said respective cards therein and for exerting pressure on said cards when said cards are inserted therein,

a plate integrally connecting said back side surface to said overlapping means are disposed approximately perpendicularly to said back side surface along a side edge thereof for preventing said one of said cards from slipping out of a side end of the pressure clip means after the card has been inserted beneath said overlapping means, and

sleeve means integrally connected to said back side surface along said side edge thereof for enabling said pressure clip means to pivot about a longitudinal axis passing through said sleeve means; and

securing means disposed along said longitudinal axis and passing through each of said sleeve means of said plurality of pressure clip means for securing each of said pressure clip means in place along said longitudinal axis thereby permitting said pressure clip means to pivot clockwise and counterclockwise about said longitudinal axis.

4,341,029

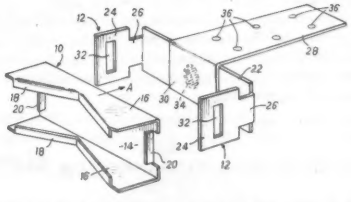
MOUNTING FOR OFFSET SIGNS

Robert A. H. Heard, Church Farm, 63 Church La., Backwell, Bristol, BS19, 3JJ, England

Continuation of Ser. No. 35,913, May 4, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,130

Int. Cl.³ G09F *15/00*

U.S. Cl. 40—607 **10 Claims**

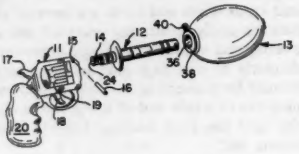


1. A device for mounting a radially offset sign plate to a supporting post, comprising a channel shaped saddle member formed from sheet metal and having a pair of opposite side elements of similar form and spaced apart joined by a base element and adapted along their edges remote from the base element to seat against a supporting post, a pair of sheet metal attachment elements separate from the saddle and at opposite ends of the saddle member adapted for connection to a portion of a supporting post seated against the saddle member, a transverse elongate plate-like element of sheet metal joining the attachment elements and lying adjacent to the base of the channel of the saddle member on the side thereof remote from said edges of the side elements thereof, whereby the transverse element is urged toward the base of the saddle member when the attachment elements are secured to a supporting post, and a sheet metal mounting plate of L-form providing two limbs, a first shorter limb disposed between the transverse element and the base of the saddle member so as to be clamped between them when the transverse element is urged toward the base of the saddle member, and a second longer limb extending in the direction opposite to the channel mouth in a plane at right angles to that of the transverse element and the base of the saddle member and parallel to the length of the channel, the longer limb being apertured to receive means for securing thereto a flange at a radially extending edge of the sign plate.

4,341,030
HUNTING DOG TRAINING DEVICE

Ronald L. Little, Lakewood, Calif., assignor to Little Launcher, Inc., Irvine, Calif.

Filed May 14, 1980, Ser. No. 149,574
Int. Cl.³ F41C *27/06*
U.S. Cl. 42—1 F **14 Claims**



1. A hunting dog training device having a readily adjustable launching stroke length, comprising:

a launching shaft having an outside surface, a discharge end, and a mounting end, said launching shaft having a longitudinal bore therethrough beginning at its mounting end and terminating in a plurality of vent openings at its discharge end, said longitudinal bore being in gas-passing communication with means for discharging a blank cartridge into the mounting end, through the longitudinal bore, and out of said plurality of vent openings, said launching shaft having a plurality of grooves on its said outside surface;

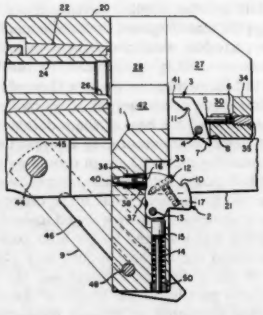
a projectile having a body and a rigid sleeve generally along its longitudinal axis, said rigid sleeve having a mouth and an internal surface generally complementary in shape and slightly oversized with respect to said outside surface of the launching shaft, said rigid sleeve having a rigid plug member at its end opposite its said mouth, said projectile being mounted onto said launching shaft by means of said projectile rigid sleeve, and said projectile includes a scent carrying insert within a pocket of said projectile; and

one or more O-rings nested within one or more of said plurality of grooves on the outside surface of the launching shaft, each said O-ring being extended beyond said launching shaft outside surface and being in sealed contact with said internal surface of the projectile.

4,341,031
PERCUSSION FIRING MECHANISM FOR INDUSTRIAL GUNS

John R. Palmer, and Kenneth C. Rowlands, both of Utica, N.Y., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Jun. 26, 1980, Ser. No. 163,306
Int. Cl.³ F41C *11/04*
U.S. Cl. 42—23 **12 Claims**



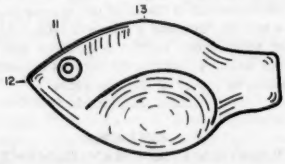
1. In an industrial gun which includes a barrel having a shell-receiving chamber; a breechblock; a yoke secured to said barrel and formed with a passage extending transversely to the length of said barrel and opening into said chamber, said passage receiving said breechblock for sliding movement therein; and means for displacing said breechblock in said passage transversely of said barrel, between an open position in which said chamber is open for loading, and a closed position; a firing pin; a hammer movably mounted in said breechblock and resiliently biased for movement from a cocked position toward a fired position contacting said firing pin; a sear mounted in said yoke for releasably latching said hammer in said cocked position; said sear and said hammer being constructed and arranged for mutual latching engagement at an intermediate stage of movement of said breechblock from said open toward said closed position, said sear acting, during subsequent movement of said breechblock toward said closed position, to displace said hammer toward said cocked position; the improved firing mechanism which comprises:

cooperating cam means formed on said hammer and said sear, said cam means being mutually engageable by said displacement of said hammer toward said cocked position, said cam surfaces being constructed and arranged to disengage said hammer from latching engagement with said sear for movement to said fired position substantially coincident with the completion of movement of said breechblock to said closed position.

4,341,032
FISHING LURE WITH INHERENT ORIENTING BALLAST

Daniel P. Olszewski, Indialantic, Fla., assignor to Ego Lures Company, Melbourne, Fla.

Filed Apr. 24, 1980, Ser. No. 142,870
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.45 **7 Claims**



1. A fishing lure, comprising a body, including:

an upper section including a flat top surface starting at the nose of the lure and ending at the top of the back of the lure, the plane of said flat top surface creating an angle greater than 0° and less than 90° to the longitudinal axis of the body;

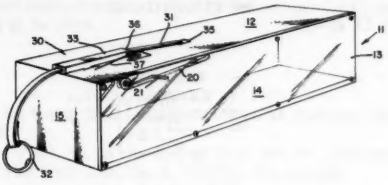
a lower section including a front and a tail section of approximately the same average thickness as said upper section and a bulbous section positioned in the longitudinal center and lower half of the lure body, said bulbous section thicker in cross section than said upper section, said difference in thickness selected to cause the center of gravity of said body to be within said lower section; and

a concaved surface configuration between the side edges of said flat top surface and said bulbous section dimensioned to create a boundary layer effect in the surface flow over said body which increases drag as the flow direction approaches the direction perpendicular to the plane of said flat top surface.

4,341,033
RELEASING AND RESETTING MECHANISM FOR USE IN A RAT TRAP

David B. Siegel, 3450 Sawtelle Blvd., Apartment 212, Los Angeles, Calif. 90066

Filed Jan. 19, 1980, Ser. No. 199,111
Int. Cl.[3] A01M *23/30*
U.S. Cl. 43—81 3 Claims



1. An improved releasing and resetting mechanism for use in a rat trap which includes a rectangular shell having an entrance opening, a top, a bottom, a pair of sides and a back, said improved releasing and resetting mechanism comprising:

a. trapping means pivotally attached to the top of the rectangular shell within the rectangular shell and which is disposed so that said trapping means is parallel to the top of the rectangular shell when said trapping means is in its set position and so that when said trapping means has been triggered said trapping means contacts the bottom of the rectangular shell;

b. a spring which is biased between said trapping means and the top of the rectangular shell downwardly biasing said trapping means toward the bottom of the rectangular shell;

c. a plastic band which has a plurality of parallelly disposed teeth, said plastic band being mechanically coupled to said trapping means;

d. securing means for securing said plastic band so that said plastic band holds said trapping means in its set position;

e. an integral member having a first end which is pivotally coupled to the top of the rectangular shell and which is disposed adjacent to said spring and a second end to which the bait is attached; and

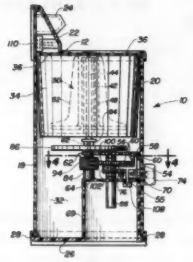
f. a latch which is mechanically coupled to said integral member adjacent to the first end of said integral member, said latch restrains said securing means so that said plastic band holds said trapping means in its set position whereby said improved releasing and resetting mechanism is triggered when said integral member pivots about the first end of said integral member as the bait is touched by a rat which causes said latch to release said securing means thereby releasing said plastic band.

4,341,034
TOY WASHING MACHINE

Kwok W. Tsui, and Sing C. J. Yuen, both of Hong Kong, Hong Kong, assignors to Arco Industries Ltd., Hong Kong, Hong Kong

Filed Apr. 9, 1981, Ser. No. 252,310
Int. Cl.[3] A63H *3/52*
U.S. Cl. 46—14 8 Claims

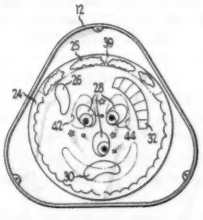
1. A toy washing machine comprising in combination, a generally rectangular box-like cabinet including a top having an opening therein for loading and unloading and a vertical front panel, a cover for said opening hinged at one end to said top, a cup-shaped tub supported by and extending downward from said top and contained within the upper portion of said cabinet, said tub being provided with a central sleeve integral with and extending upward from the bottom of said tub, an agitator member having an elongated thimble mounted upon and receiving said central sleeve of said tub and adapted for rotary movement therearound, a drive shaft extending upward through said sleeve of said tub and connected at the upper end thereof to the top of said thimble of said agitator for driving relationship therewith, a manually operable horizontally slidable actuating slide member within said cabinet in spaced relationship below the bottom of said tub and having a finger-engageable projection extending through a slot in said front panel, horizontal guide grooves formed respectively in a pair of horizontal mounting plates spaced vertically and fixedly supported in said cabinet below said tub, said grooves supporting opposite edges of said actuating slide member for reciprocatory movement in opposite driving and return directions, an elongated rack formed on one edge of said actuating slide member, a spur gear on the lower end of said drive shaft, a gear train mounted between said spur gear and the rack of said actuating slide member and operable when said actuating slide member is moved in driving direction to rotate said agitator in said tub, and power release means operable to disengage said actuating slide member and said spur gear on said drive shaft to permit movement of said actuating slide member in return direction without interfering with continual unidirectional rotation of said agitator.



4,341,035
GRAPHIC TOY

Eugene Jaworski, Park Ridge, and Harry Disko, South Barrington, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 1, 1980, Ser. No. 117,541
Int. Cl.[3] A63H *11/00*
U.S. Cl. 46—135 R 15 Claims



15. A graphic toy, comprising:

a multi-sided housing wherein each side defines a base upon which said toy may be positioned;

said housing also including a front and back;

first and second discs rotatably mounted in said housing, each of said first and second discs including indicia thereon;

said second disc being weighted to rotate less than one full revolution upon rotation of said housing from one side to another;

drive means mounted in said housing and secured to said first disc; and

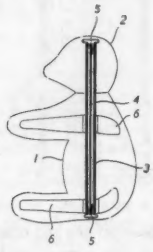
weight means secured to said drive means for rotating said first disc upon rotation of the housing to being positioned on another base.

4,341,036

STUFFED TOY

Nam J. Yeu, 16-35 Hwayang-Dong, Seongdong-Ku, Seoul, Rep. of Korea

Filed Oct. 20, 1980, Ser. No. 198,650
Int. Cl.³ A63H *3/00*
U.S. Cl. 46—151 **5 Claims**



1. A toy comprising in combination a one-piece body portion and an integral head portion; and restoring means extending longitudinally through both said head and said body portions for restoring the toy to its original condition after having been deformed, said means comprising,

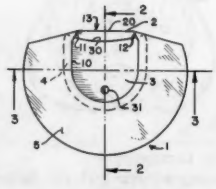
an elongated, one-piece flexible, plastic tube extending longitudinally from a portion of said head and continuously through said body and terminating at a bottom portion of said body, a one-piece flexible element extending through said flexible tube and being secured at opposite ends to means at the opposite ends of the tube whereby radical deformations of said head relative to said body are obviated and the original condition and position of said head relative to the toy body is restored by the force of said flexible tube and flexible element.

4,341,037

GAME CALL

Robert R. Moss, Rte. 2, Cole Camp, Mo. 65325

Filed Apr. 20, 1981, Ser. No. 255,889
Int. Cl.³ A63H *5/00*
U.S. Cl. 46—178 **6 Claims**



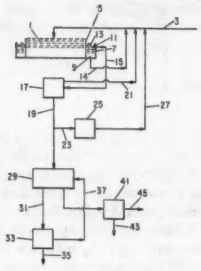
1. A game call comprising a plurality of planar, thin, flexible diaphragms separated from one another by at least one U-shaped, flat-sided frame of a thickness greater than said diaphragms, whereby said diaphragms lie in parallel planes, each of said diaphragms having a free open edge and being sealed around the remaining portion of its edge, the free edges of adjacent diaphragms being of different effective lengths.

4,341,038

OIL PRODUCTS FROM ALGAE

Moshe R. Bloch, 11 Assaf Simchoni, Beer Sheva; Joel Sasson, Hapalmach 30, Jerusalem; Margaret E. Ginzburg, 1 Dakar Alley, French Hill, Jerusalem, all of Israel; Zvi Goldman, 24 Diamond Ledge Rd., Stafford Springs, Conn. 06076; Ben Z. Ginzburg, 1 Dakar Alley, French Hill, Jerusalem, Israel; Nissim Garti, Alroi 5-B, Jerusalem, Israel, and Asher Porath, Kubovi 12, Jerusalem, Israel

Filed Jul. 2, 1980, Ser. No. 165,251
Claims priority, application Israel, Jul. 3, 1979, 57712
Int. Cl.³ A01G *7/00*
U.S. Cl. 47—1.4 **23 Claims**



1. A process for obtaining oil products from algae, which process comprises:

(a) growing halophilic, unicellular, swimming algae, having no cell walls, in a saline solution and in the presence of carbonic anhydrase enzyme derived from such algae;

(b) harvesting said algae to obtain an algae-salt water slurry;

(c) extracting oil products from said slurry employing a solvent for said products; and

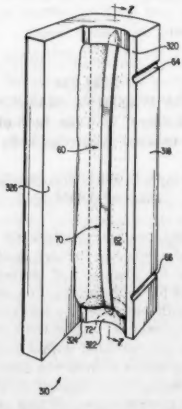
(d) recovering said oil products and an algae residue.

4,341,039

SELF-ADJUSTING PLANT INSULATOR WITH LIQUID CONTAINER

Stanton L. Reese, 726 Laurel La., Lakeland, Fla. 33803

Continuation-in-part of Ser. No. 971,184, Dec. 20, 1978, abandoned. This application Oct. 31, 1979, Ser. No. 90,079
Int. Cl.³ A01G *13/00*
U.S. Cl. 47—2 **28 Claims**



1. An insulating device for thermally insulating the trunk of

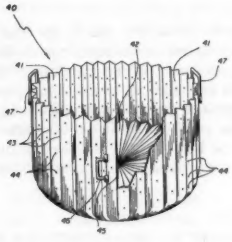
a plant which includes a heat sink means positionable in close proximity to the portion of the trunk to be insulated, said heat sink means containing a liquid that freezes at a temperature slightly above the temperature at which damage to the plant occurs and that has a high latent heat of fusion; and means for holding said heat sink means in close proximity to the portion of the trunk to be insulated, said holding means being formed by two semirigid, thermally insulating elements which are self-adjusting so that the size of a cavity within said holding means increases as the size of the trunk increases, said latent heat of fusion being given up to the plant trunk during periods of reduced ambient temperature below that which would cause damage to the plant.

4,341,040

CABINET

Ronald W. Smith, 2300 Lazy Hollow #343-D, Houston, Tex. 77063

Division of Ser. No. 53,071, Jun. 28, 1979, Pat. No. 4,260,206.
This application Jan. 2, 1981, Ser. No. 222,248
Int. Cl.³ A01G *9/02*
U.S. Cl. 47—73 **2 Claims**



1. A planter comprising:
a bottom rigidly joined to a plurality of vertical sides, said planter being open at its top; and
a plant container removably positionable atop said bottom and intermediate said sides, said plant container comprising;
a unitary member of biodegradeable material having a bottom and side portion said bottom and sides including uniformly spaced ridges with apertures intermediate said ridges, said side portion further including means for manually dividing adjacent portions of said side portion, whereby a plant contained therein may easily be removed.

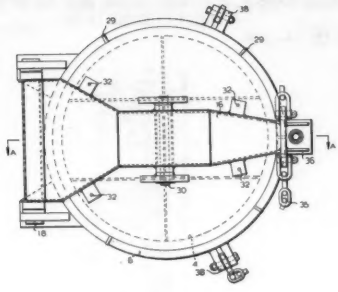
4,341,041

EXPLOSION RELIEF MEANS

Dennis G. Bloomfield, Stourbridge, England, assignor to Steetley Engineering Limited, West Midlands, England

Filed Mar. 21, 1980, Ser. No. 133,492
Int. Cl.³ E05B *65/10*
U.S. Cl. 49—141 **19 Claims**

1. In or for a processing plant, explosion relief means adapted to be mounted over an opening in the processing plant, to provide relief for the plant in the event of an internal explosion, said relief means comprising
(a) a mounting device adapted to be secured to the plant adjacent to the opening;
(b) a securing device adapted to be secured to the plant on the side of the opening generally opposite to the mounting device;
(c) a door assembly adapted to be mounted on the mounting device for pivotal movement relative thereto;
(d) closing mechanism operative between the door assembly and the securing device to hold the door assembly in a closed position relative to the opening, said closing mechanism being adapted to allow the door assembly to open when the pressure within the plant rises above a predetermined pressure; and
(e) an elongate tension member adapted to be mounted so as to extend across the door assembly and which is operative,



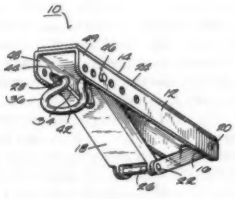
subsequent to initial opening movement of the door assembly, to engage the door assembly and to apply a force to the door assembly acting to move the door assembly towards its closed position.

4,341,042

SLIDING DOOR SPACER

Donald A. Schulz, Wauwatosa, Wis., assignor to S-B Manufacturing Co., Ltd., Milwaukee, Wis.

Filed Aug. 29, 1980, Ser. No. 182,721
Int. Cl.³ E05D *15/06*
U.S. Cl. 49—404 **7 Claims**



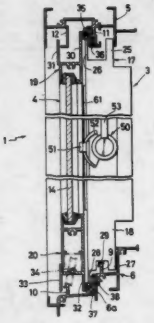
1. A door spacer to prevent vertical movement of a sliding door into the space adjacent its top track member comprising:
a. a rigid, elongate base member;
b. mounting means to mount said base member generally horizontally within said space; and
c. first and second rigid legs attached to said base member by first and third means of attachment and to each other by second means of attachment to form a triangle with a generally horizontal base and an apex, adjacent said second means of attachment, extending vertically into said space,
d. wherein said first and second means of attachment are respectively first and second pivotal linkages allowing rotation around first and second transverse axes,
e. and wherein said third means of attachment comprises locking means which is fixed to one end of said second leg and lock receiving means on said base member to receive said locking means at a selected one of at least two longitudinally separated points, whereby to allow adjustment of the vertical distance between said apex and said base member by adjusting said locking means of said third means of attachment longitudinally relative to said base member.

4,341,043

WEATHERTIGHT SLIDING SASH WINDOW ASSEMBLY

Yukio Yamamoto, and Takeo Uehara, both of Uozu, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Aug. 12, 1980, Ser. No. 177,402
Claims priority, application Japan, Aug. 16, 1979, 54-103542
Int. Cl.³ E05D *13/04*
U.S. Cl. 49—449 7 Claims



1. A weathertight sliding sash window assembly comprising:
(a) an outer frame defining a window opening;
(b) a pair of relatively movable, overlapping interior and exterior sashes mounted within said outer frame for opening and closing said window opening, said interior and exterior sashes having a pair of meeting first and second stiles, respectively;
(c) a pair of mating first and second fastener members mounted on said first and second stiles at respective midportions thereof, said first fastener member being movable between a locked position in which said first fastener member engages said second fastener member to keep said interior and exterior sashes closed and an unlocked position in which said first fastener member releases said second fastener member to be opened;
(d) a pair of first and second engaging members disposed on and extending longitudinally of said first and second stiles, respectively, said first engaging member being movable between a first position in which said first engaging member pulls said second engaging member interiorly to force said second stile firmly on to said first stile throughout their lengths and a second position in which said first engaging member releases said second engaging member to allow said second stile off said first stile; and
(e) means on said first stile for moving said first engaging member between said first and second positions in response to said first fastener member's movement between said locked and unlocked positions.

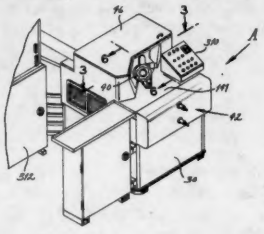
4,341,044

MACHINE FOR GRINDING GASHES IN END MILL CUTTERS

James R. Cross, Florissant, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed May 19, 1980, Ser. No. 151,269
Int. Cl.³ B24B *3/06*
U.S. Cl. 51—5 D 22 Claims

6. A machine for grinding gashes into the end of a rotary cutting tool blank, such as the blank from which an end mill is derived, said machine comprising: a base; a grinding wheel that revolves about an axis; means for supporting the grinding wheel on the base and for moving the grinding wheel such that its periphery repeatedly passes through a grind point that is fixed in position with respect to the base; a work head for holding a cutting tool blank; indexing means on the work head for rotating the blank incrementally about the tool axis as the tool is held in the work head; means for supporting the work head on the base such that the end of a blank that is held by the work head is at the grind point, and for further permitting the work head to pivot for purposes of adjustment about a first axis that is parallel to the axis of the grinding wheel and about a second axis that is perpendicular to the first axis; and first feed means for incrementally advancing the work head so that the cutting tool blank carried by it moves into the grind point, thus enabling the grinding wheel to cut into the blank and create



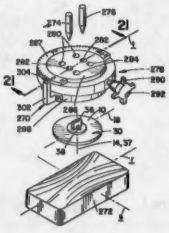
gashes that open out of the end of the blank; the first feed means and the indexing means being correlated with the means for supporting and moving the grinding wheel such that the first feed means and indexing means change the position of the blank with respect to the base only when the grinding wheel is remote from the grind point and out of contact with the blank, whereby that the blank is held in a fixed position with respect to the base as the grinding wheel cuts into its end.

4,341,045

ADAPTER CHUCK FOR MOUNTING LENS BLANKS

Frank D. Sorrells, Knoxville, Tenn., assignor to Cole National Corporation, Cleveland, Ohio

Division of Ser. No. 44,991, Jun. 4, 1979, Pat. No. 4,267,672.
This application Nov. 18, 1980, Ser. No. 207,924
Int. Cl.³ B24B *13/02*
U.S. Cl. 51—216 LP 9 Claims



1. An adapter chuck for use in orienting a lens blank so that a predetermined axis angle for said lens blank angularly disposed from a lens blank base line may be placed in general parallel alignment with the base curve of a lap in lens blank fining and polishing apparatus to accommodate any axis previously incorporated into said lens blank during a lens surface generating operation and wherein said lens blank has a lens block affixed thereto at the lens blank frame center axis so as to extend outwardly from the opposite lens blank face which is to be fined and polished, said adapter chuck comprising:
a generally cup-shaped adapter body having an upper end wall and a side wall with a cylindrical receiving cavity extending coaxially inward into said body from a lower end wall thereof, said upper end wall including mounting means adapted to fixedly position said adapter chuck relative to said fining and polishing apparatus and with said adapter body further including an angle measuring scale fixedly

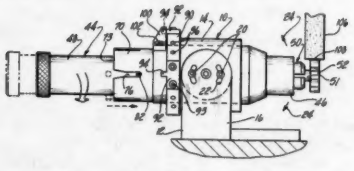
secured thereto; a generally cylindrical seat block having at least a longitudinal portion thereof received in said receiving cavity for selective rotation about the longitudinal axis of said chuck, said seat block including indicator means cooperable with said scale for indicating the relative rotated position of said seat block to said adapter body from a first normal position and a predetermined second position angularly spaced therefrom by an amount equal to said lens blank axis angle; means cooperating between said adapter body and seat block for retaining said seat block in said receiving cavity while allowing selective rotation therebetween and substantially preventing relative lateral, longitudinal and angular movement therebetween; receiving means in the outermost end wall of said seat block for receiving said lens block with said lens blank frame center axis positioned substantially coaxial with said adapter chuck longitudinal axis and with said lens block substantially fixed against lateral, angular and rotational movement relative to said seat block while being freely longitudinally separable therefrom, said lens blank base line and said lap base curve being substantially aligned parallel to each other when said chuck is fixedly positioned relative to said fining and polishing apparatus by said mounting means with said seat block in said first normal position; and, locking means penetrating said adapter body side wall and being selectively movable into and out of locking engagement with said seat block for respectively preventing and allowing relative rotation between said adapter body and seat block.

4,341,046

TOOL GRIND FIXTURE

Bernard M. Pollington, 110 6th St., Marion, Mich. 49665

Filed Aug. 25, 1980, Ser. No. 180,825
Int. Cl.³ B24B *3/22*
U.S. Cl. 51—225 **8 Claims**



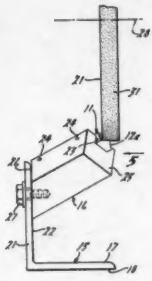
1. A tool sharpening fixture comprising:
a housing having a throughbore,
a bushing having a throughbore and rotatably mounted in said housing throughbore,
stop means for limiting the rotation of said bushing between two preselected rotational positions,
an elongated member insertable through said bushing throughbore so that a portion of the elongated member extends outwardly from each end of the housing throughbore,
a pin secured to and extending radially outwardly from one side of said elongated member,
means at one end of said elongated member for holding a tool to be sharpened, and
means for locking said member to said bushing at preselected rotational positions of said member with respect to said bushing, said locking means comprising an indexing ring having a plurality of axially extending slots formed through it at circumferentially spaced positions around the ring, said slots being open to one axial end of the ring, means for detachably securing the other axial end of said ring to said bushing, wherein each of said slots is dimensioned to axially slidably receive said pin therein so that, upon insertion of said pin into one of said slots, said elongated member is locked to said bushing.

4,341,047

METHOD FOR GRINDING THREAD CUTTING TOOLS

Joseph F. St. Denis, Roseville, Mich.

Division of Ser. No. 120,906, Feb. 12, 1980, abandoned. This application Apr. 13, 1981, Ser. No. 252,791
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—288 **2 Claims**



1. A method of sharpening a cutting edge and grinding a relief angle on an elongated thread cutting tool, comprising the steps of holding said tool in a tool holder with the cutting edges of the tool exposed at one end of said tool holder, and holding the tool holder with the longitudinal axis of said tool inclined from a supporting surface at the thread angle by means of a flat positioning surface formed on the other end of said holder also at the thread angle with respect to said longitudinal axis and for angular adjustment about an axis disposed at right angles to said supporting and positioning surfaces, releasably clamping said supporting and positioning surfaces solidly together sharpening a cutting edge of said tool by a back and forth motion using the periphery of a grinding wheel, unclamping and angularly adjusting said tool holder in one direction about said axis until the relief angle for said cutting edge is obtained, reclamping the tool holder in the angularly adjusted position, and grinding a relief angle for the sharpened cutting edge again by a back and forth motion of said grinding wheel.

4,341,048

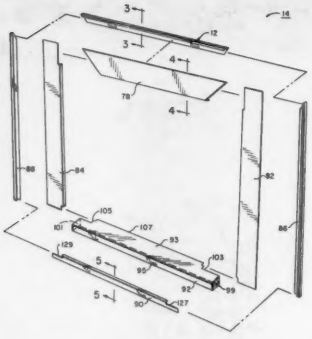
METHOD AND ASSEMBLY FOR CLADDING A WINDOW FRAME

Mearl J. Minter, Oskaloosa, Iowa, assignor to Rolscreen Company, Pella, Iowa

Filed May 27, 1980, Ser. No. 153,448
Int. Cl.³ E06B *1/04, 3/00*
U.S. Cl. 52—211 **7 Claims**

1. An assembly for the exterior cladding of an existing window frame having a plurality of window frame members the assembly comprising: a plurality of window frame expanders each including an elongated, generally planar cladding portion adapted to clad a window frame member of the window frame and further adapted to overly a hereinafter defined fastener flange, the window frame expander further including an elongated receptor-received end adapted to be received by a hereinafter-defined receptor, the cladding portion of the window frame expander having a back surface adapted to be disposed adjacent the said window frame member of the window frame and a front, display surface adapted to be displayed to the environment;
and
a plurality of window frame expander receptors each including an elongated fastener flange adapted to receive fasteners therein and an elongated, flexible receptor flange adapted to define a frame expander receiving zone along the fastener flange and further adapted to receive and retain the receptor-received end of the frame expander in the frame expander receiving zone;

whereby the window frame members of the existing, exterior window frame may be clad, the fasteners covered by



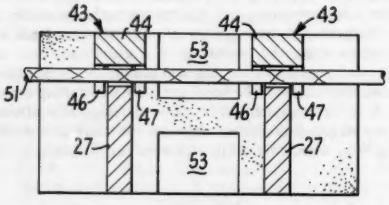
the frame expanders and a moisture barrier created between the environment and the fasteners.

4,341,049

SYSTEM FOR BUILDING WALL CONSTRUCTION

Peter H. Y. Hsi, Honolulu, Hi., assignor to MPH Ltd., Honolulu, Hi.

Filed Jun. 21, 1979, Ser. No. 50,600
Int. Cl.³ F04B *2/38*
U.S. Cl. 52—421 **9 Claims**



1. A system for building wall construction, comprising
a plurality of hollow cast concrete blocks of rectilinear form laid up in stacked courses to define a wall,
said blocks being formed with spaced transverse webs defining vertically aligned openings extending substantially the height of said wall,
the upper portions of said webs being relieved to define grooves providing openings for horizontal reinforcing rods,
cast concrete closure members positioned at selected of said grooves and formed for preventing communication thereat between adjacent of said vertically aligned openings,
and an epoxy bonding agent securing together confronting surfaces of said blocks.

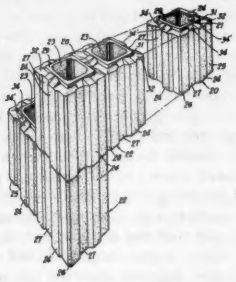
4,341,050

CONSTRUCTION MODULE

Leonard L. Long, 2025 Peachtree Rd., NE., Suite 7, Atlanta, Ga. 30309

Continuation of Ser. No. 23,261, Mar. 23, 1979, abandoned. This application Oct. 23, 1980, Ser. No. 199,846
Int. Cl.³ E04C *1/10*
U.S. Cl. 52—589 **11 Claims**

1. A construction module in the general form of a rectangular parallelepiped including side faces which are arranged upright in use and are corrugated for interlocking engagement with the corrugations of like modules in a structure, and the module having male and female end faces, the female end face comprising the relief negative of the male end face, whereby opposing male and female end faces of plural modules in stacked relationship in a structure may interfit in positively locked relationship, the male and female end faces of the module including concentrically arranged inner and outer shoulder surfaces extending continuously around the margin of the module with the inner shoulder surface being substantially rectangular and the outer shoulder surface extending to and joining said corrugated side faces of the module, each corru-



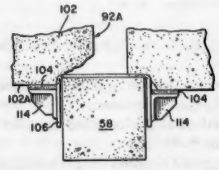
gated side face of the module having at least one rib projecting from the normal plane of the side face and at least one adjacent recess parallel to the rib and being formed inwardly from the normal plane of the side face with the outer surface of said rib and the inner surface of said recess being flat, and the module having a flat end face normal to said side faces at each opposite end thereof, and defining planes of maximum projection of the male end face of the module and maximum relief for the female end face of the module so that said module provides positive interlocking and self-aligning means on all side surfaces as well as on the opposite end faces thereof that present a flat abutment surface.

4,341,051

BUILDING STRUCTURE AND PROCESS OF BEAM ASSEMBLY THEREIN

William J. Sim, 4068 Arjay Cir., Ellicott City, Md. 21043, and Ronald M. Marth, 5409 Lucy Dr., Waldorf, Md. 20601

Division of Ser. No. 136,390, Apr. 1, 1980, Pat. No. 4,296,048. This application Dec. 18, 1980, Ser. No. 217,695
Int. Cl.³ E04B *1/38*
U.S. Cl. 52—702 **15 Claims**



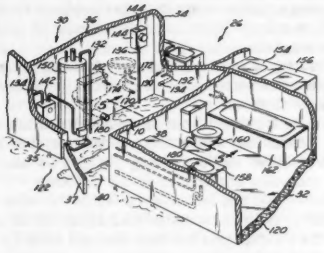
1. The method of supporting an end of a first precast concrete beam on an underlying supportive second precast concrete beam at an angle to said first beam, comprising placing inverted straps over the second underlying beam adjacent the ends of said first beam, fixedly attaching an angle member to and between said straps, said angle having a vertical leg which is attached to said straps and a horizontal leg in operative underlying supportive engagement with the underside of first beam.

4,341,052

BUILDING UTILITY CORE

John C. Douglass, Jr., 863 Ave. Acapulco, San Clemente, Calif. 92672

Filed Jun. 17, 1980, Ser. No. 160,425
Int. Cl.³ E04B 5/48
U.S. Cl. 52—742 3 Claims



1. An improved method of constructing a residential structure, comprising:

pouring a concrete slab on the ground at a building site to form the floor of several rooms within the perimeter of said residential structure, and to form a recessed area within said perimeter at which concrete is not poured in which said ground forms the floor;

erecting on site the walls and roof of said several rooms to arrange utility intensive rooms around said recessed area, the walls of said utility intensive rooms at least partially enclosing said area;

before or after pouring said slab extending main service utility connections below the ground into said area;

extending piping through said walls enclosing said area and connecting it to one or more fixtures disposed in said utility intensive rooms;

connecting said piping to said main service utility connections in said area; and

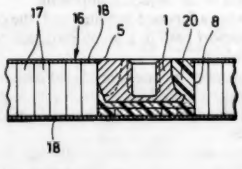
after completion of the building said piping being readily accessible from the interior of said area.

4,341,053

BUILT-IN CONNECTOR ELEMENT FOR SANDWICH TYPE COMPOUND PANELS

Karl Dettfurth, and Bernd Dettfurth, both of Hamburg, Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Mar. 10, 1980, Ser. No. 128,558
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911058
Int. Cl.³ E04C 2/00
U.S. Cl. 52—787 11 Claims



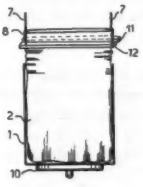
1. A connector element adapted for anchoring into a sandwich type compound panel, comprising a single piece body having a central opening and anchoring means in the form of anchoring fins extending integrally and radially out of said single piece body, said anchoring fins extending substantially concentrically relative to said central opening for holding said connector element in said panel, threaded means in said central opening of said single piece body, said single piece body further comprising an upper part with fin corners formed by said anchoring fins, said single piece body further comprising a single substantially rounded flange located as an integral part of said single piece body opposite said fin corners, said anchoring fins merging into said lower substantially rounded single flange, said fin corners defining a first circle having a given diameter, said first circle extending concentrically with said central opening, said single flange defining a second circle, said given diameter of said first circle being equal to or larger than said second circle, whereby said anchoring fins merge into said lower flange.

4,341,054

APPARATUS FOR FILLING AND HEAT SEALING A BAG

Michel P. G. Courtheoux, Chateaurenard, France, assignor to Etablissements Courtheoux, Bondy, France

Filed Apr. 30, 1980, Ser. No. 145,358
Claims priority, application France, Jun. 13, 1979, 79 15167
Int. Cl.³ B65B 3/16
U.S. Cl. 53—268 2 Claims



1. An apparatus for manufacturing a closed flexible plastic bag filled with a liquid product and having a bottom, a top with an opening and two edges, comprising a basket into which said bag is placed; means for closing the top of the bag by heat welding; means for holding the top of the bag at a constant level, said holding means including edge moving means for bringing the two edges of the opening in contact with each other, said edge moving means comprising two vertical fingers engaged at the centre of the opening and moved away from each other by a mechanism to opposite zones in said opening as far as possible from each other; means for raising the basket for raising the bottom of the bag; means for filling the bag with a liquid product through the opening; and means for operating simultaneously the means for raising the basket for raising the bottom of the filled bag and the means for holding the top of the filled bag at a constant level.

4,341,055

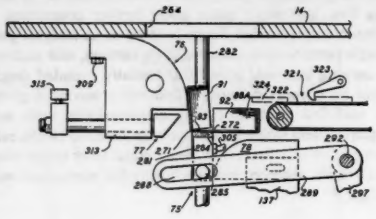
METHOD FOR FORMING PAPER BOXES AND THE LIKE

Donald F. Williams, 15 W. Mason St., Santa Barbara, Calif. 93102, and Charles L. Phy, Rte. 2, Box 143, McEwen, Tenn. 37101

Division of Ser. No. 786,955, Apr. 12, 1977, Pat. No. 4,194,441.
This application Jan. 30, 1980, Ser. No. 116,898
Int. Cl.³ B65B 11/18
U.S. Cl. 53—462 2 Claims

1. A method of forming a folded box from a blank having a hinge panel joining cover and receptacle sections with each section having end and side flaps including the steps in order of forming the blank into a tray, joining the end and side flaps at the junctures thereof, grasping said formed tray at the hinge

panel, and carrying said tray into engagement with folding elements to bend said cover and receptacle sections toward



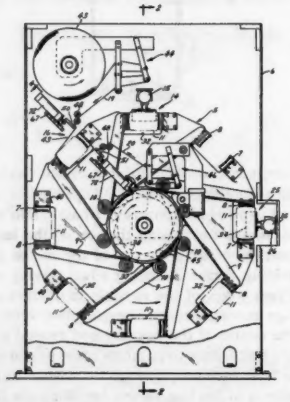
each other along said hinge panel until said respective section end and side flaps overlap.

4,341,056

MACHINE FOR COMPRESSION BAND PACKAGING

Dale D. Leanna, Little Suamico; Allen R. Jorgensen, Abrams, and Eugene W. Wittkopf, Suamico, all of Wis., assignors to Magna-Graphics Corporation, Oconto Falls, Wis.

Filed Mar. 17, 1980, Ser. No. 130,814
Int. Cl.³ B65B *11/30, 13/20*
U.S. Cl. 53—529 **4 Claims**



1. Apparatus for forming packages, each comprising a band of thermoplastic sheet material that snugly surrounds a quantity of a resiliently compressible product and maintains it under substantial compression, said apparatus being characterized by:

A. a turret rotatable about an axis and having a radially outwardly opening bay in its periphery that extends axially therethrough to have open ends and is carried in one orbital direction by turret rotation successively past a loading station, a banding station and an unloading station;

B. a pair of elongated, blade-like carrier jaws, each having at one of its ends a connection with said turret,

(1) said connections disposing the carrier jaws

(a) at circumferentially opposite sides of said bay,

(b) both projecting lengthwise in one axial direction from said turret, and

(c) with a lengthwise extending surface of each in opposing relation to a surface of the other, and

(2) the connection of one of said carrier jaws with the turret comprising a lever having

(a) an attachment portion to which said one end of said one carrier jaw is fixed,

(b) a fulcrum connection with the turret that is spaced from said attachment portion, and

(c) a cam follower spaced from said attachment portion and said fulcrum connection;

C. a loading pusher at said loading station;

D. means for moving said load pusher in a direction parallel to said opposing surfaces of the carrier jaws for inserting a quantity of product between them;

E. banding means at said banding station for

(1) causing a portion of a web of thermoplastic sheet material to form a loop embracing the carrier jaws and product between them,

(2) producing at least one seam which forms the loop into a closed band surrounding the carrier jaws and product between them, and

(3) severing said band from the remainder of the web;

F. a cam substantially concentric with said turret and confined against rotation, said cam being engaged by said cam follower and being arranged to swing said lever

(1) to move said one carrier jaw towards the other when the carrier jaws are between the loading station for compressing the product that has been inserted between the jaws and the banding station and

(2) to move said one carrier jaw away from the other when the carrier jaws are between the banding station and the unloading station for tensioning the band into contact with the portions of the product that are exposed between the jaws;

G. an unloading pusher at said unloading station; and

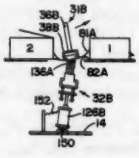
H. means for moving said unloading pusher in said one axial direction through the open ends of said bay and between said carrier jaws to effect simultaneous disengagement from them of product inserted between them at the loading station and a band installed around them at the banding station.

4,341,057

WRAPPING MACHINE

Jean-Louis Limousin, Clearwater, Fla., assignor to Pet, Inc., St. Louis, Mo.

Continuation of Ser. No. 944,858, Sep. 22, 1978, abandoned. This application Jun. 18, 1980, Ser. No. 160,615
Int. Cl.³ B65B *11/10*
U.S. Cl. 53—553 **9 Claims**



1. A machine for wrapping heat sealable sheet material about at least a portion of an object, comprising:

a conveyor having a forward terminal end, the conveyor establishing a transport path in a given direction to continuously move said object;

a first sealing member on one side of said path having a central hub, a plurality of discrete arms each extending from the hub to a terminal end and a sealing element carried by each of the terminal ends;

means mounting and continuously driving the first sealing member to rotate the terminal end sealing elements in a path substantially aligned with and tangential to the transport path for sequentially placing the sealing elements at a work station aligned with the transport path in space beyond the conveyor terminal end;

a second sealing member on opposite side of said path with a sealing element;

passive means for mounting the second sealing member to

permit the sealing element thereof to swing through an arcuate segment path; the passive means lacking integral driving means for advancing the second sealing member;

means for moving the element of the second sealing member in substantially perpendicular direction to said transport path into and out of contact with a sealing element of said first sealing member in the work station, the second sealing element being pulled along in said arcuate segment path in said direction due to only its contact with and the continuous movement of the element of the first sealing member;

means urging the second sealing member in a direction opposite to said given direction to a position aligned with the work station whereby the second sealing member will return after the first sealing means loses contact therewith;

means for directing a supply of the sheet material in descending alignment over the conveyor to the work station;

one of the sealing members presenting a heated fuser element for sealing and severing said heat sealable sheet upon contact of said first and second sealing elements;

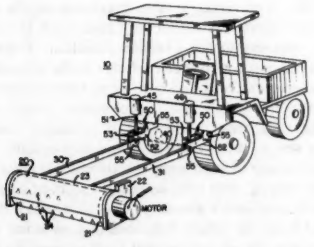
control means for driving the conveyor, for rotating said first sealing member and for moving the element of said second sealing member in a programmed sequence to bring the sealing elements into working contact at the work station when each terminal sealing element of the first sealing member is positioned in the work station whereby the sheet material is tucked over the object by the cooperative action of two sequential arms of the first sealing member, and a series of objects may flow through the work station uninterrupted and the sheet material in severed in proportion to the object size.

4,341,058

EXERCYCLE MOWER APPARATUS

Andrew Chun, 1410 172nd Pl., SW., Alderwood Manor, Wash. 98036

Filed Feb. 5, 1981, Ser. No. 231,808
Int. Cl.³ A01D *53/00*
U.S. Cl. 56—2 **5 Claims**



1. A pedal powered exercycle mower apparatus for cutting ground cover, said apparatus comprising in combination:

a mobile vehicle member having a main supporting frame including a pair of major wheels, front and rear, and an auxiliary frame including a pair of rear minor wheels, left and right;

means for cutting ground cover within a path traversed by said member, said means being mounted on said main supporting frame;

a pair of foot pedals mounted on said main supporting frame for powering said apparatus by manual rotational movement about a horizontal axis transverse to the longitudinal axis of said main supporting frame;

means, mounted on said main supporting frame, for apportioning power derived from rotational movement of said foot pedals to drive said means for cutting ground cover and to concurrently drive said apparatus in a forward or rearward direction; and

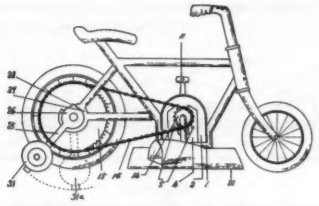
means for applying a spring loaded force on said auxiliary frame to enhance stability of said mobile vehicle member for mowing operations and to cause said pair of rear minor wheels to move in a forward arcuate direction when said rear major wheel of said main supporting frame is elevated from ground level, to convert said apparatus to a stationary exercycle.

4,341,059

DUAL COUPLING MECHANISM FOR PROVIDING FLOATATIONAL OPERATION OF A FRONT MOUNTED CUTTING ASSEMBLY

Michael Gerzanich, Hopelawn, N.J., assignor to LeHara Manufacturing Co., Inc., East Brunswick, N.J.

Filed Oct. 20, 1980, Ser. No. 198,786
Int. Cl.³ A01D *49/00*
U.S. Cl. 56—15.8 **10 Claims**



1. Apparatus for mowing vegetation on undulating terrains, including a vehicle of the type including a frame assembly having a front end with first and second extending tabs on said front end, each having an aperture and a back end, the improvement therewith of apparatus for providing a front, floatational mower suspension assembly, comprising:

a first and a second coupling section each comprising a main planar body having an aperture at a first end, an extending rod coupled to said body on a first side and having a depending flange with an aperture on said flange coaxial with said aperture on said first end, to provide a space therebetween for accommodating said extending tabs, with means inserted through said apertures to provide a pivot point for said planar body, said planar body having a box-like housing positioned on the side opposite that containing said rod,

first and second cylinder assemblies each having a movable piston, said cylinder assemblies coupled to said vehicle frame, with each piston coupled to an associated one of said planar bodies within said box-like housing, said planar members having a front end remote from said first end,

a first and a second extending beam coupled to said front end of an associated planar body, and a cylindrical cutting head rotatably mounted between said beams.

4,341,060

CARRIAGE FOR A GRASS TRIMMING DEVICE

Joseph M. Lowry, 308 Sweetbriar Dr., and Ernest E. Griffin, 12306 Ridgefield Pkwy., both of Richmond, Va. 23233

Division of Ser. No. 119,176, Feb. 6, 1980, Pat. No. 4,287,709. This application Feb. 2, 1981, Ser. No. 230,807
Int. Cl.³ A01D *50/00, 35/262*
U.S. Cl. 56—17.5 **3 Claims**

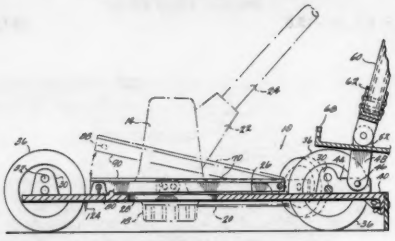
1. A carriage for a trimming device of the type having a motor, a housing for the motor, a cutting element in the form of a length of cable connected to said motor so as to be rotatable about an axis at high speed for cutting grass, weeds and the like, said carriage comprising:

a platform having a top and a bottom side, means for supporting said platform for movement over the ground,

an aperture in said platform for receiving and supporting a motor driven cutting device,

releasable clamping means movably mounted on said top

side of said platform for securely holding the cutting device in said aperture with the cutting element disposed to extend from said bottom side of said platform and with the motor on said top side thereof above said aperture, said clamping means including first and second retaining arms each having one end pivotally mounted on said top side of said platform at spaced apart locations, each arm being pivotable between an open position, wherein said aperture in said platform is unobstructed by said arms, and a closed position, wherein each said arm extends to a respective portion of said platform on the side of said



aperture opposite to said respective locations, said platform having grasping means for engaging and releasably holding the other ends of said retaining arms so that, when a motor housing is disposed in said aperture, said retaining arms will engage the housing when said retaining arms are in said closed position,

said grasping means comprising a pair of hook members mounted on said platform, each hook member having an open portion facing said platform, each hook member being located so as to be engageable by the other end of an associated retaining arm.

4,341,061

REEL-TYPE STUBBLE CONDITIONING DEVICE

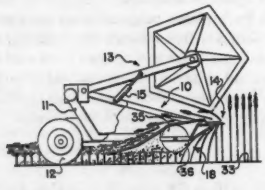
Warren Denzin, R.R. #1, Regina, Saskatchewan, Canada

Filed Oct. 14, 1980, Ser. No. 196,603

Claims priority, application Canada, Nov. 28, 1979, 340827

Int. Cl.³ A01D *43/00*

U.S. Cl. 56—192 **7 Claims**



1. In a swather which includes a frame, a transverse cutter bar assembly for cutting a swath including a transverse cutter bar support member, a canvas assembly, and a swath discharge area at one end of the canvas of said canvas assembly; the improvement comprising a stubble conditioning assembly below said swath discharge area for conditioning the tops of the stubble over which the swath is to be deposited, said swather conditioning assembly including a horizontally located stubble cutting and conditioning reel component journalled for rotation within and below the swath discharge area and means supporting said reel component from the frame of the swather, said conditioning reel component including swather guide shield means over the upper side thereof for receiving the swath from the swath discharge area and depositing same upon the conditioned stubble therebehind, and means operatively connecting said reel to a source of power, said shield means curving rearwardly and downwardly over part of said reel component.

4,341,062

COFFEE HARVESTER

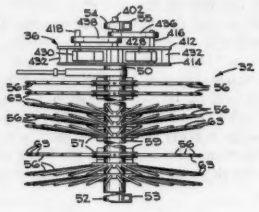
Roy Scudder, Araraquara, Brazil, assignor to FMC Corporation, Chicago, Ill.

Filed Jul. 18, 1980, Ser. No. 170,293

Claims priority, application United Kingdom, Aug. 28, 1979, 7929833

Int. Cl.³ A01G *19/00*

U.S. Cl. 56—330 **8 Claims**



1. In a harvesting machine for harvesting crops growing on plants such as trees, bushes, canes, vines or the like, having stalks growing from the ground, said harvester having frame means, means for advancing the harvester in a direction along a row of stalks, means on said frame means for dislodging crops from the plants, endless conveyor means on said frame means having laterally spaced endless flexible side conveyors which straddle the crop along a crop receiving reach, means for driving said conveyors for moving said reach in a conveying direction opposite to the advance direction of the said harvester and having a zero speed relative to the ground, a row of individual crop catching and conveying trays mounted on each of said side conveyors; the improvement in said means for dislodging said crop comprising a rotatable central shaft mounting sets of axially spaced generally radially extending tine arrays where in each array the tines are regularly circumferentially spaced, split hubs releasably secured to said central shaft and formed with a plurality of bores in which the tines are fixed, said bores in certain hubs defining an acute angle with respect to the axis of said central shaft so that the tines fixed therein are correspondingly inclined with respect to the axis of the central shaft.

4,341,063

AIR TEXTURED YARNS

William F. Southerlin, Travelers Rest, and Paul W. Eschenbach, Moore, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

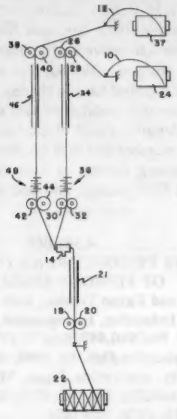
Filed Aug. 26, 1980, Ser. No. 181,636

Int. Cl.³ D02B *1/20;* D02G *3/38*

U.S. Cl. 57—6 **1 Claim**

1. A method of making an air textured yarn having a core yarn and an effect yarn comprising the steps of: supplying a first partially oriented polyester yarn at a first feed rate, supplying a second partially oriented polyester yarn at a lower second feed rate, heating, false twisting, and drawing the first polyester yarn while cold drawing the second yarn, supplying

the first and second yarns into an air jet, supplying gaseous fluid into the air jet to commingle and texture the first and



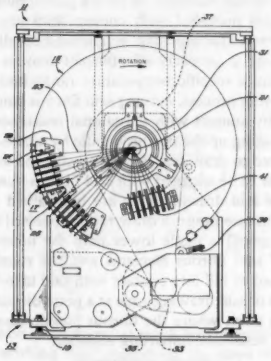
second yarns and withdrawing the commingled and air textured yarn from the air jet at a third feed rate.

4,341,064

CABLE MAKING APPARATUS

Jasper D. Wells, and Robert M. Gilbert, both of Graham, Tex., assignors to Electric Hose & Rubber Company, Ocala, Fla.

Filed Sep. 2, 1980, Ser. No. 183,015
Int. Cl.[3] D07B *3/06;* D04C *3/40, 1/12*
U.S. Cl. 57—13 4 Claims



1. In a cable braiding assembly including:
   a. a structural framework;
   b. a main rotation means rotatably supported on said structural framework having a central aperture for passage therethrough of a plurality of cables being braided into a main cable for being wrapped into respective layers in a hose or the like; and
   c. a plurality of bobbins comprising a plurality of cable spools supported on respective shafts on said main rotation means such that said cables can be pulled therefrom with respective degrees of tension to said central aperture for braiding;

the improvement comprising:

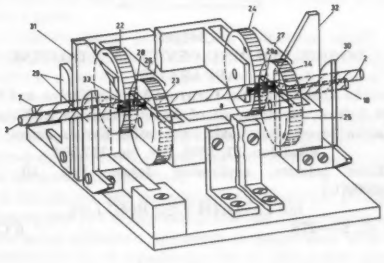
   d. bearing and tensioning means for providing accurate rotation and adjustable tension on respective said cable spools such that respective said cables can be unwound from respective said spools at a predetermined tension; said bearing and tensioning means comprising,
   1. a plurality of respective bushings and nuts nonrotatably supported by respective said shafts; each said bushing having a radially protruding base at a first end and threadingly engaging a said nut at a second end opposite said first end and adapted to encompass therebetween a plurality of adjustably loadable bearings supporting said spool; and
   2. a plurality of adjustably loadable bearings; a pair of said bearings for each said spool; respective said bearings having respective angular contacts so as to adjust the tension in response to adjustment of thrust loaded onto the bearing by respective nuts against respective said radially protruding bases such that respective tensions for the respective cable spools can be adjusted individually by respective said nuts.

4,341,065

PRODUCTION OF BINDINGS OF FIBER BUNDLES

August Baumgartner, Uster, and Martin Plaschy, Zurich, both of Switzerland, assignors to Zellweger Uster Ltd., Uster, Switzerland

Filed Jun. 8, 1981, Ser. No. 271,261
Claims priority, application Switzerland, Jul. 23, 1980, 5612/80
Int. Cl.[3] B65H *69/06;* D01H *15/00*
U.S. Cl. 57—22 15 Claims



1. A method for the production of a binding for twisted fiber bundles, comprising positioning the fiber bundles to be bound together in at least approximately-parallel, closely-neighboring position to each other; applying shearing forces and tractive and/or compressive forces to at least a part of the circumference of each of the fiber bundles to be bound and on all of the fiber bundles by effecting physical contact between the same with the use of opposed moving deformation members, in order, on one hand, to change the original cross sections and/or the original structure of the fiber bundles to be bound, and, on the other hand, to at least partly release individual fibers from at least one of the fiber bundles to be bound and to displace them such that they finally wind around the fiber bundles to be bound in a force-locking manner at least in on part of the operational region of the deformation members; and then relocating the fiber bundles bound by the winding out of the operational region of the deformation members, characterized in that the forces are applied to the fiber bundles during binding in directions which are selected variably in different sections in the longitudinal direction of the binding to be produced.

4,341,066

METHOD OF AND APPARATUS FOR THE BINDING OF FIBER BUNDLES

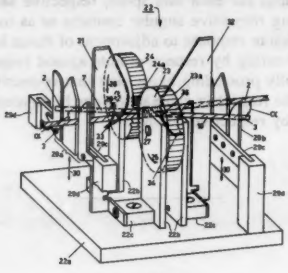
August Baumgartner, Uster, Switzerland, assignor to Zellweger Uster Ltd., Uster, Switzerland

Filed Jun. 8, 1981, Ser. No. 271,262

Claims priority, application Switzerland, Jul. 23, 1980, 5611/80

Int. Cl.³ B65H 69/06; D01H 15/00

U.S. Cl. 57—22 16 Claims



1. A method of binding of fiber bundles, comprising binding two fiber bundles together in a force-locking manner adjacent respective loose ends thereof; and during the binding of the fiber bundles, deflecting a loose end of a bundle out of its normal position, guiding that bundle away around an edge and severing the loose ends in such a manner that the loose end is intentionally frayed to a large extent by the said edge so that the remaining frayed portion on the side of the binding may be worked into the binding.

4,341,067

BOBBIN HOLDING DEVICE IN A DOFFING APPARATUS

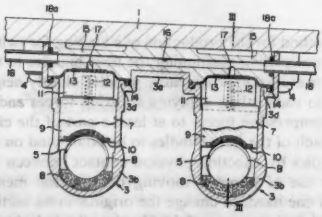
Kanetaka Kondo, Nagoya; Takayuki Morita, Kariya, and Masashi Ushino, Hekinan, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jan. 31, 1980, Ser. No. 117,304

Claims priority, application Japan, Feb. 10, 1979, 54/16000[U]

Int. Cl.³ D01H 9/02; B66C 1/46

U.S. Cl. 57—275 6 Claims



1. A bobbin holding device for use in a bobbin doffing and donning apparatus, said device comprising:

an elongated doffing bar;

a hollow body having a base portion connected to said doffing bar and means for receiving a bobbin;

bobbin holding means positioned within said hollow body and movable relative to said bobbin receiving means between a projected position for holding a bobbin and a retracted position for releasing a bobbin;

flexible means, positioned within said hollow body in fluid tight relation with respect to said bobbin holding means, for moving said bobbin holding means from said retracted position thereof to said projected position thereof;

means for supplying pressurized fluid from an external source to said flexible means without passing said fluid through said doffing bar, and for thereby causing said flexible means to move said bobbin holding means to said projected position, said supplying means comprising a rigid block member having therein a fluid passage extending in a direction parallel to said doffing bar throughout the entire length of said block member, a space between said block member and said flexible means, and said block member having therein at least one hole extending between said fluid passage and said space.

4,341,068

METHOD FOR PRODUCING AN IMPROVED BUNDLE OF FIBROUS ELEMENTS

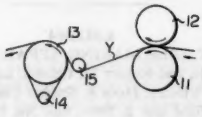
Takao Negishi, and Kazuo Tomiita, both of Otsu, Japan, assignors to Toray Industries, Incorporated, Tokyo, Japan

Division of Ser. No. 940,437, Sep. 7, 1978, Pat. No. 4,258,542. This application Oct. 14, 1980, Ser. No. 196,916

Claims priority, application Japan, Mar. 13, 1978, 53-27634; Apr. 7, 1978, 53-40279; Jun. 16, 1978, 53-72224; Jul. 18, 1978, 53-87472; Jul. 18, 1978, 53-87473

Int. Cl.³ D02G 3/34

U.S. Cl. 57—288 18 Claims



1. A method for manufacturing fibrous bundles composed of a plurality of fibrous elements, at least a partial number of said fibrous elements provided with uneven thickness along axis thereof, said method comprising, supplying a bundle of fibrous elements having a property of constant tension elongation behavior within a specific temperature range into a drawing zone of a drawing process, moving said fibrous bundle while it is being bent by contact with a frictional resistance-imparting member and taking up the fibrous bundle by a take-up roller at a constant speed to draw said fibrous bundle, the temperatures of said member to be engaged with said fibrous bundle and the atmosphere of said drawing zone are maintained within said specific temperature range, a draw ratio expressed by (take-up speed)/(feed speed) is made lower than the inherent natural draw ratio of said fibrous elements and the running fibrous bundle is caused to fall into contact with said take-up roller in a yarn passage of said drawing zone at a point distant by 50 mm or less from a point where the fibrous bundle separates from said frictional resistance-imparting member.

4,341,069

METHOD FOR GENERATING POWER UPON DEMAND

Weldon K. Bell, Pennington; Clarence D. Chang, Princeton, both of N.J., and Reuel Shinnar, Great Neck, N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 2, 1980, Ser. No. 136,637

Int. Cl.³ F02C 3/28

U.S. Cl. 60—39.02 18 Claims

1. A method for generating power from coal which comprises:

(A) gasifying coal in the presence of steam and oxygen to generate a syngas comprising hydrogen and carbon oxides;

(B) passing a first portion of the generated syngas to a fired turbine-compressor prime mover driving an electric generator and expanding fired syngas in the turbine thereof,

and passing compressed air from said turbine-compressor prime mover to said fired turbine;

(C) removing sulfur and nitrogen from a second portion of said generated syngas and passing said second portion in contact with a catalyst and under conditions to synthesize a dimethyl ether product, passing unreacted syngas separated from said dimethyl ether product to one of said dimethyl ether synthesis reaction step or to said fired turbine; and

(D) passing synthesized dimethyl ether to a storage zone and passing dimethyl ether from said storage zone to a fired turbine-compressor prime mover electric power generator.

4,341,070

HIGH THERMAL EFFICIENCY POWER PLANT AND OPERATING METHOD THEREFOR

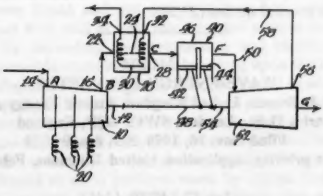
John M. Clarke, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00348, § 371 Date Mar. 31, 1980, § 102(e) Date Mar. 31, 1980, PCT Pub. No. WO81/02912, PCT Pub. Date Oct. 15, 1981

PCT Filed Mar. 31, 1980, Ser. No. 213,245

Int. Cl.³ F02C 6/00

U.S. Cl. 60—39.04 **4 Claims**



1. A method of performing work utilizing the energy of an expanding working fluid comprising the steps of:

(a) substantially isothermally compressing a working fluid from an initial pressure to a predetermined degree;

(b) thereafter adding heat to the working fluid under substantially constant pressure conditions;

(c) thereafter substantially isentropically compressing the working fluid a further amount;

(d) thereafter adding additional heat to the working fluid under substantially constant volume conditions;

(e) thereafter substantially isentropically expanding the working fluid to substantially said initial pressure while extracting work therefrom;

(f) thereafter extracting hear from the working fluid; and

(g) steps (c), (d) and at least the initial portion of step (e) being performed in a positive displacement mechanism having a higher expansion ratio than compression ratio.

4,341,071

FUEL CONTROL SYSTEM FOR A GAS TURBINE

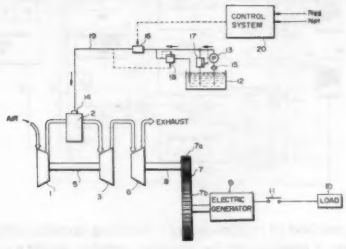
Toshimi Abo, and Hidetoshi Kanegae, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed May 28, 1980, Ser. No. 154,050

Claims priority, application Japan, Jun. 1, 1979, 54-68313

Int. Cl.³ F02C 9/26

U.S. Cl. 60—39.14 R **7 Claims**



1. A gas turbine control system for a two-shaft gas turbine having a compressor turbine and a power turbine, which comprises:

(a) a fuel control valve for controlling the rates of fuel supplied into a combustion chamber of said two-shaft gas turbine, said fuel control valve being controlled by electric signals;

(b) a control signal generator for outputting signals for supplying an optimum fuel supply rate to said fuel control valve as a function of the gas generator shaft speed of the compressor turbine;

(c) a power turbine differential speed detector for determining the power turbine speed and for outputting differential speed signals between the actual speed and a target speed of the power turbine shaft;

(d) a calculation unit for outputting a signal for giving an appropriate fuel supply rate to said fuel control valve after executing arithmetic operations in accordance with the differential speed signals supplied by said power turbine shaft differential speed detector;

(e) a comparator for outputting a signal to switch from the signal from said control signal generator to the signal from said calculation unit at the moment the signal level of said calculation unit becomes less than that of said control signal generator, the outputs of both said control signal generator and said calculation unit being connected thereto; and

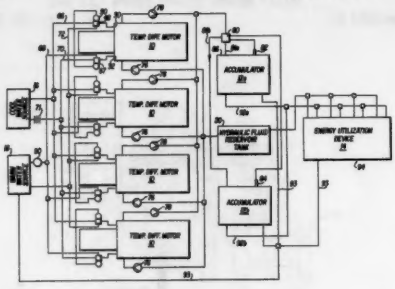
(f) a first selector for switching from the signal from said control signal generator to that from said calculation unit at the moment said comparator outputs a corresponding signal, the outputs of both said control signal generator and said calculation unit being connected thereto, the output of said first selector being connected to said fuel control valve,

whereby the two-shaft gas turbine is first controlled in accordance with optimum ignition fuel supply rates defined by a function stored in said control signal generator and next controlled in accordance with fuel supply rates detected and operated by said power turbine differential speed detector and said calculation unit after the power turbine speed approaches a target power turbine speed.

4,341,072
METHOD AND APPARATUS FOR CONVERTING SMALL TEMPERATURE DIFFERENTIALS INTO USABLE ENERGY

Arthur J. Clyne, 5651 N. Luce Rd., Alma, Mich. 48801

Filed Feb. 7, 1980, Ser. No. 119,287
Int. Cl.[3] F03G 7/06
U.S. Cl. 60—325 25 Claims

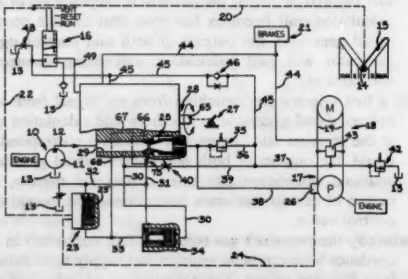


1. A method of reciprocating a working member comprising the steps of positioning the working member inside a container for reciprocation therein; sealing the edges of said working member to the sides of said container to thereby form subchambers on opposite sides of said working member inside said chamber; positioning a fusible substance in one of said subchambers having the characteristic of expanding or contracting upon passing through its fusion temperature, the fusion temperature of said substance being at least 10° F. above an unrefrigerated water temperature; circulating a coolant which has been cooled by unrefrigerated water in close proximity to said container to thereby cool said fusible material; thereafter circulating warm coolant at least 10° warmer than said fusion temperature in close proximity to said cylinder to warm said fusion material wherein said fusion material is calcium-chloride hexahydrate.

4,341,073
CONTROL CIRCUIT FOR VARIABLE DISPLACEMENT PUMPS WITH OVERRIDE VALVE

William J. Spivey, Jr., Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00413, § 371 Date Jun. 13, 1979, § 102(e) Date Jun. 13, 1979
PCT Filed Jun. 13, 1979, Ser. No. 89,126
Int. Cl.[3] F04B 49/00; F16H 39/46
U.S. Cl. 60—399 16 Claims

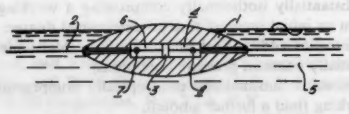


1. A control circuit comprising
a source of pressurized fluid (10),
variable displacement pump means (17) for having the displacement thereof varied, said variable displacement pump means (17) including a servo system (26) adapted to vary the displacement of said pump means (17),
a replenishing valve (43) connected between said source (10) and said pump means (17) to make-up loss of fluid and to controllably interrupt fluid from said pump means (17),
pressure responsive control valve means (50,60) for controlling fluid pressure to and from said replenishing valve (43) when positioned in actuated and deactuated conditions of operation, respectively,
primary control means (14,16,23,25) for effecting the communication of pressurized fluid from said source (10) to said replenishing valve (43) and actuatable for effecting the selective venting of pressurized fluid from said replenishing valve (43) and for varying the displacement of said pump means (17) through said servo system (26) between minimum and maximum values, said primary control means incuding control valve means (16) for communicating fluid pressure to said pressure responsive control valve means (50,60) to effect movement thereof to its actuated condition of operation and means (25) for creating a differential fluid pressure signal to said servo system (26) for controlling the displacement of said pump means (17) in response to actuation of said primary control means (14,16,23,25), and
override control means (27,28), independent of the supply of said source fluid to said primary control means (14,16,23,25) said pressure responsive control valve means (50,60), and said replenishing valve (43), for (A) selectively varying said signal to said servo system (26) for varying the displacement of said pump means (17) when said primary control means (14,16,23,25) is in its actuated condition of operation, independently of actuation of the control valve means (16) of said primary control means (14,16,23,25), in response to an initial movement of said override control means (27,28), and (B) venting pressurized fluid from said pressure responsive control valve means (50,60) to effect movement thereof to its deactuated condition of operation wherein pressurized fluid is vented from said replenishing valve (43) by said pressure responsive control valve means (50,60) and further varying the displacement of said pump means (17) through said servo system (26) in response to further movement of said override control means (27,28).

4,341,074
WAVE-ENERGY CONVERTER

Michael J. French, United Kingdom Atomic Energy Authority, 11 Charles II St., London, SW1Y 4QP, England

Filed Nov. 16, 1979, Ser. No. 94,855
Claims priority, application United Kingdom, Feb. 9, 1979, 7904658
Int. Cl.[3] F03B 13/12
U.S. Cl. 60—504 17 Claims



1. A device for converting the energy of waves on a liquid into useful work, the device comprising, a body arranged to be located in the liquid, means arranged to extend in a substantially horizontal direction for holding the body at the surface of the liquid in a manner to allow to and fro movement of the body in said direction in response to waves on the surface, said holding means comprising an elongate member arranged to extend through the body and along which elongate member said to and fro movement is allowed to occur, and means for

converting said to and fro movement of the body into useful work.

4,341,075

METHOD AND A DEVICE FOR ENERGY CONVERSION

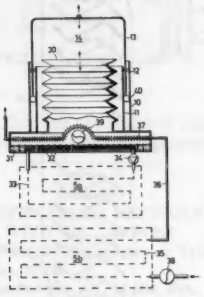
Anders D. Backlund, S-820 90 Ytterhogdal, Holmen, Sweden

Filed Jan. 17, 1980, Ser. No. 112,896

Claims priority, application Sweden, Jan. 17, 1979, 7900397

Int. Cl.³ F03G 7/06

U.S. Cl. 60—531 **12 Claims**



1. A device for converting low temperature heat energy into mechanical energy, comprising:

at least one chamber containing a working fluid for performing work in response to temperature variations;

at least one container having at least one expansible and compressible part, said at least one container part being disposed in said working fluid;

at least one first and at least one second heat accumulator, each arranged to store and deliver heat by melting and freezing ice, said at least one second accumulator having an agent therein to depress the freezing point thereof to a temperature lower than the freezing point in said at least one first accumulator; and,

a refrigerant disposed in said container, capable of shifting between liquid and gas phases and in heat exchanging contact with said at least one first and second accumulators for expanding and contracting said expansible and compressible container part depending upon the temperature thereof, said refrigerant being arranged to alternately be supplied with heat from said at least one first accumulator, being vaporized thereby so as to perform work by expansion of said at least one container part, and be cooled by said at least one second accumulator, being thereby condensed so as to perform work by contracting said at least one container part, whereby mechanical energy is imparted to said working fluid by the expansion and contraction of said at least one container part.

4,341,076

HYDRAULIC BRAKE BOOSTER

Helmut Steffes, Eschborn, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,072

Claims priority, application Fed. Rep. of Germany, May 2, 1979, 2917684

Int. Cl.³ B60T 13/00

U.S. Cl. 60—547 R **13 Claims**

1. A hydraulic brake booster comprising:

a housing having a longitudinal axis;

a working piston disposed in said housing coaxial of said axis for driving a master cylinder piston;

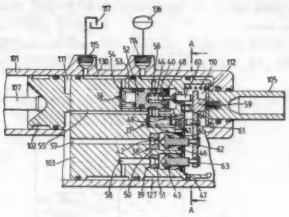
a transmission piston disposed in said housing coaxial of said axis having one end thereof adjacent the end of said working piston remote from said master cylinder piston, said transmission piston having a diameter greater than the diameter of said working piston;

a transmission pressure chamber disposed in said housing between said working piston and said transmission piston, said transmission pressure chamber being filled with a pressure fluid;

a drive pressure chamber disposed in said housing adjacent the other end of said transmission piston;

a control piston disposed in said housing adjacent said other end of said transmission piston operable from a rest position by a brake pedal;

a control valve arrangement disposed in said transmission piston controllable by said control piston, said control valve arrangement having an inlet valve to connect said drive pressure chamber to a pressure fluid source and a discharge valve to connect said drive pressure chamber to a reservoir;



a supply valve arrangement associated with said fluid source and said transmission pressure chamber, said supply valve arrangement opening to couple pressurized fluid from said fluid source to said transmission pressure chamber when said control piston is moved from said rest position and said supply valve arrangement closing when pressure in said transmission pressure chamber exceeds a limiting value which corresponds approximately to the lower limit of an active braking pressure; and

a return valve arrangement to connect said transmission pressure chamber to said reservoir.

4,341,077

PROCESS AND SYSTEM FOR RECOVERY OF ENERGY FROM GEOTHERMAL BRINES AND OTHER HOT WATER SOURCES

Samuel G. Woinsky, Irvine, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation of Ser. No. 763,533, Jan. 28, 1977, abandoned. This application Oct. 15, 1979, Ser. No. 84,537

The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.

Int. Cl.³ F03G 7/00

U.S. Cl. 60—641.3 **25 Claims**

1. Process for recovery of energy from hot water-containing fluids including geothermal brines and other hot water sources, said hot water-containing fluids including uncondensible gases, which comprises

(a) introducing said hot water-containing fluid into a heat transfer zone and directly contacting said hot water-containing fluid therein with a working fluid in liquid form, said heat transfer zone being maintained at or above the critical pressure of said working fluid and said hot water-containing fluid being at a temperature at or above the critical temperature of said working fluid, to provide

(i) a dense phase working fluid and

(ii) a cooled water containing fluid including a portion of said working fluid, and uncondensible gas,

(b) expanding said dense phase working fluid in an expander to produce work,

(c) discharging said expanded working fluid,

(d) cooling said discharged working fluid to provide a con-

densed working fluid comprising condensed water vapor and uncondensible gas,

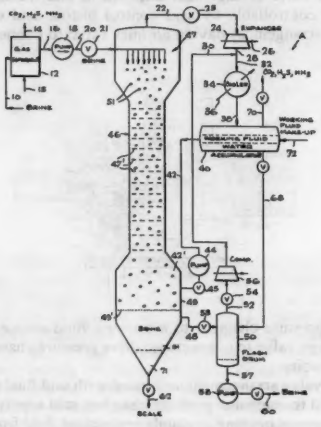
(e) separating, in an accumulator zone, said condensed working fluid from said condensed water and uncondensible gas,

(f) venting said uncondensible gas from said accumulator zone,

(g) returning said separated working fluid under pressure to said heat transfer zone,

(h) withdrawing said cooled water-containing fluid from said heat transfer zone,

(i) flashing said withdrawn water-containing fluid to flash off



said portion of said working fluid and provide a further cooled water-containing fluid, said flashing being carried out at a pressure sufficiently high to minimize the amount of uncondensible gas flashed off with said working fluid,

(j) compressing said flashed working fluid,

(k) mixing said compressed working fluid with said discharged working fluid, and

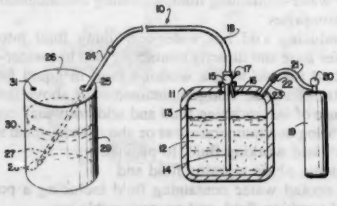
(l) discharging said further cooled water-containing fluid whereby the level of uncondensible gases recycled to said accumulator zone is reduced to a level that little or no uncondensible gas is vented from said accumulator zone.

4,341,078

IMMOBILIZING TOXIC LIQUIDS

William Weitzen, Bethesda, Md., assignor to General Technology Applications, Inc., Arlington, Va.

Filed Aug. 5, 1980, Ser. No. 175,561
Int. Cl.³ F17C *11/00*
U.S. Cl. 62—48 **28 Claims**



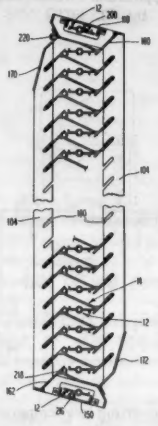
1. A process for the immobilization of a toxic liquid within a container which comprises injecting a slurry of cryogenically comminuted polymer particles in a cryogenic refrigerant into said liquid within said container.

4,341,079

CRYOPUMP APPARATUS

John W. Bonn, Columbus, Ohio, assignor to CVI Incorporated, Columbus, Ohio

Continuation-in-part of Ser. No. 136,194, Apr. 1, 1980, Pat. No. 4,275,566. This application Oct. 30, 1980, Ser. No. 202,219
Int. Cl.³ B01D *8/00*
U.S. Cl. 62—55.5 **20 Claims**



1. Cryopump apparatus comprising:

(a) means for supplying cryogenic fluid;

(b) means for supplying refrigerant fluid;

(c) panel means within said apparatus including

(i) heat exchange surfaces on opposite sides of said panel means, and

(ii) bore means for conducting said cryogenic fluid therethrough in heat transfer relationship with said heat exchange surfaces;

(d) means delivering said cryogenic fluid to said panel bore means;

(e) radiation shield means within said apparatus including

(i) heat exchange surfaces on opposite sides of said shield means, and

(ii) bore means for conducting said cryogenic fluid therethrough in heat transfer relationship with said heat exchange surfaces;

(f) means delivering said refrigerant fluid to said shield bore means;

(g) a zig-zag passageway provided between adjacent shield means, each of said passageways including one of said means optically blocking said panel means.

4,341,080

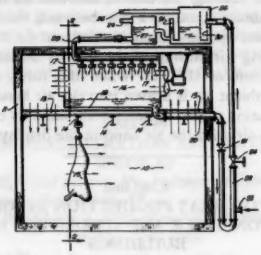
METHOD FOR REFRIGERATION

Robert G. Shaw, Drummoyne, Australia, assignor to The Commonwealth Industrial Gases Limited, New South Wales, Australia

Division of Ser. No. 121,199, Feb. 13, 1980, Pat. No. 4,307,580. This application May 21, 1981, Ser. No. 265,937
Claims priority, application Australia, Feb. 20, 1979, PD7749
Int. Cl.³ F25D *17/02*
U.S. Cl. 62—64 **4 Claims**

1. A method of refrigerating a moist article comprising the steps of circulating a cooling atmosphere past said article, cooling said atmosphere by contact with a moisture absorbent

liquid spray, collecting and recirculating said liquid, cooling said liquid by bringing it into contact with a cryogenic fluid



and removing said fluid and any absorbed moisture from said liquid before returning said liquid to said spray.

4,341,081

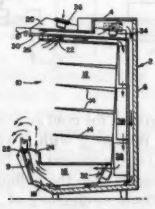
MULTIBAND OPEN FRONT REFRIGERATED CASE WITH AIR DEFROST

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 11,804, Feb. 14, 1979. This application Aug. 29, 1979, Ser. No. 70,882

Int. Cl.³ F25D *21/12*

U.S. Cl. 62—82 **22 Claims**



1. A method of operating an open front refrigerated display case where the display case includes:

a cabinet having top, rear, bottom and front walls and an opening within the front wall for enabling access to products displayed within the display case; an inner air conduit passing around the top, rear and bottom walls of the cabinet and having a first air outlet opening adjacent one end of the opening in the front wall of said cabinet and a first air inlet opening adjacent the other end of said opening in said front wall of the cabinet with the first air outlet and the first air inlet being aligned so that air leaving the first outlet is directed towards and received by the first air inlet; and a secondary air conduit passing along the top, rear and bottom walls of the cabinet and being arranged adjacent to the inner air conduit but outwardly therefrom and having a second air outlet opening adjacent one end of the opening in the front wall of the cabinet and a second air inlet located adjacent the other end of the opening in the front wall of the cabinet with the second air outlet and the second air inlet being aligned so that air leaving said second air outlet is directed towards and received by the second air inlet; said method comprising the steps of:

circulating air through the inner air conduit in a forward direction during a refrigeration cycle of operation so as to establish an inner air band and an inner air curtain across the opening in the front wall of the cabinet;

cooling air passing through the inner air conduit only during a refrigeration cycle of operation of the display case;

circulating air through the secondary air conduit in a forward direction during a refrigeration cycle of operation so as to establish a secondary air band with a secondary air curtain across the opening in the front wall of the cabinet;

turning off said refrigeration means during a defrost cycle;

terminating the forward air flow through said secondary air conduit during a defrost cycle; and

reversing the air flow direction of said first air circulating means during a defrost cycle to draw relatively warm ambient air into said inner air conduit as the primary defrost medium and passing said ambient air over said refrigeration means to defrost said refrigeration means.

4,341,082

OPEN TOP REFRIGERATED DISPLAY CASE HAVING AMBIENT AIR DEFROST

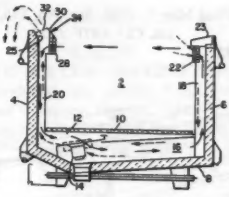
Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 11,804, Feb. 14, 1979, and Ser. No. 60,459, Jul. 25, 1979. This application Oct. 15, 1979, Ser. No. 84,858

The portion of the term of this patent subsequent to Oct. 20, 1998, has been disclaimed.

Int. Cl.³ F25D *21/12*; A47F *3/04*

U.S. Cl. 62—82 **11 Claims**



1. An open top refrigerated display case being selectively operative in a refrigeration cycle and a defrost cycle, said case comprising: a bottom wall and four side walls at least one air conduit extending along a first of said side walls, along said bottom wall and a second of said side walls, said first and second side walls being opposing side walls, said air conduit having first and second openings at its opposite ends and each of said openings being located near the top portion of the respective said side wall; means for refrigerating air moving through said conduit during a refrigeration cycle, said means for refrigerating being arranged within said air conduit; air circulating means arranged within said air conduit, said air circulating means circulating air within said air conduit in a forward direction during a refrigeration cycle and circulating air in a reverse direction during a defrost cycle, and said air circulating means drawing in ambient air from outside of said display case through said first opening when said air circulating means circulates air within said air conduit in the reverse direction; means for switching operation of said display case between a refrigeration cycle and a defrost cycle and correspondingly causing said air circulating means to change the direction of circulating of air within said air conduit; and guide means for causing air leaving said air conduit through said second opening during a defrost cycle to flow in a direction upwardly and over the outside of the adjacent said side wall so as to flow away from said display case when such air is flowing in said reverse direction so that such air is prevented from reentering said air conduit, said guide means including a baffle arranged so as to extend in a generally upward but slanted outwardly direction and to be positioned over said second opening of said air conduit for deflecting the air away from said display case.

9. A method for selectively operating an open top refrigerated display case in a refrigeration cycle and a defrost cycle, where the case includes a bottom wall and four side walls, a

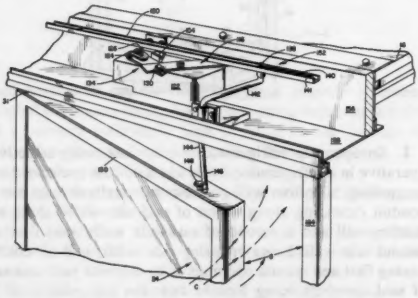
single air conduit extending along a first of the side walls, along the bottom wall and a second of the side walls, the first and second side walls being opposing side walls, the air conduit having first and second openings at its opposite ends and each of the openings being located near the top portion of the respective side wall; the method comprising the steps of: refrigerating air moving through the air conduit during a refrigeration cycle; circulating air within the air conduit in a forward direction during a refrigeration cycle; circulating air in a reverse direction during a defrost cycle; drawing in ambient air from outside of said display case through the first opening when air is circulated within the air conduit in the reverse direction; switching the operation of the display case between the refrigeration cycle and the defrost cycle and correspondingly causing the direction of circulation of air within the air conduit to be changed; and deflecting air leaving the air conduit along a path directed upwardly and over the outside of the adjacent side wall so as to flow away from the case when such air is flowing in the reverse direction.

4,341,083

DOOR OPERATING MECHANISM FOR REFRIGERATED MERCHANDISER DISPLAY CABINET

Fayez F. Ibrahim, Niles, and Elmer J. Subera, Cassopolis, both of Mich., assignors to Tyler Refrigeration Corporation, Niles, Mich.

Filed May 1, 1980, Ser. No. 145,711
Int. Cl.³ A47F *3/04*
U.S. Cl. 62—82 **54 Claims**



51. A method of operating a refrigerated display cabinet comprising a cabinet having a display space therein, and aperture means in at least one wall thereof for communicating ambient outside air with the air in the cabinet, the aperture means comprising an access opening for permitting products to be moved into and out of the display case, covering means for the aperture means including a barrier door for substantially covering the access opening, the barrier door being movable for enabling access to the cabinet, at least one air conduit extending about the display space and having an outlet opening and an inlet opening at opposite ends thereof, with the outlet opening and the inlet opening being arranged in aerodynamic alignment so that air leaving the air conduit outlet opening will be directed toward and received by the inlet opening, and an air moving means for propelling a refrigerated air band through the air conduit during a refrigeration cycle and for propelling ambient air through the cabinet during a defrost cycle, and a refrigeration means arranged within the air conduit; the method comprising the steps of:

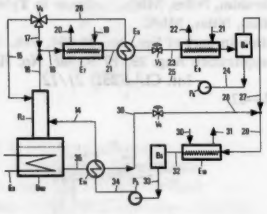
selectively operating the display cabinet in a refrigeration cycle of operation and in a defrost cycle of operation; during a refrigeration cycle, circulating the air band through the air conduit so that air is expelled from the outlet opening and received by the inlet opening so as to form an air curtain across the access opening in the cabinet along a path inside of the barrier door, and propelling the air band through the refrigeration means; during a defrost cycle of operation, terminating operation of the refrigeration means, causing ambient air to be drawn into the cabinet, pass through a substantial portion of the air conduit, and across the refrigeration means, causing the defrost ambient air to be ejected from the cabinet, creating a gap between the barrier door and the access opening to enable ambient air through-flow, and providing for closing of the gap by outside force and reestablishment of the gap when the force is removed; whereby ambient air is drawn into the air band and across the refrigeration means to defrost the same by communicating ambient air with the air band in the display cabinet.

4,341,084

COLD AND/OR HEAT PRODUCTION INVOLVING AN ABSORPTION CYCLE AND ITS USE FOR HEATING BUILDINGS

Alexandre Rojey, Garches, and Georges Cohen, Le Pecq, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Feb. 13, 1981, Ser. No. 234,214
Claims priority, application France, Feb. 15, 1980, 80 03460
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—101 **10 Claims**



1. An improved process for cold and/or heat production, in an absorption cycle operating with a working fluid (F) as a solute, and a fluid (S) as the solvent, the boiling temperature of the fluid (S) being higher than the boiling temperature of the fluid (F), and said cycle comprising at least one absorption step, at least one desorption step, at least one rectification step for the vapor withdrawn from the desorption step, at least one condensation step and at least one vaporization step, the improvement comprising the steps of:

(a) vaporizing, in the vaporization step, a portion of the liquid phase (L_1) of high fluid (F) content, obtained in the condensation step (d), taking the necessary vaporization heat at least partly from an external fluid, recovering a vapor phase (V_1) and a liquid phase (L_2), separating said vapor phase (V_1) from said liquid phase (L_2), and fractionating said liquid phase (L_2) into at least one first fraction and at least one second fraction,

(b) contacting the vapor phase (V_1) from the step (a), in the absorption step, with a liquid phase (L_3) of low fluid (F) content and high fluid (S) content from the desorption step (c), delivering heat to an external fluid, and recovering a solution (S_1) of increased fluid (F) content,

(c) feeding at least one portion of the solution (S_1) from step (b) to an intermediate point of a rectification zone wherein the rectification step is effected, flowing said portion of the solution (S_1) downwardly in said rectification zone, supplying heat at the bottom of said rectification zone by means of a heating fluid, so as to effect said desorption step of said solution (S_1) and to obtain a vapor phase (V_2) and a desorbed liquid phase (L_3), withdrawing said liquid phase (L_3) and feeding it to step (b), introducing said first portion of the liquid phase (L_2) from step (a) into said rectification zone, at the top thereof, flowing said first portion downwardly in said rectification zone, circulating said vapor zone (V_2) upwardly in said rectification zone,

and withdrawing a vapor phase (V_3) from the top of said rectification zone, and

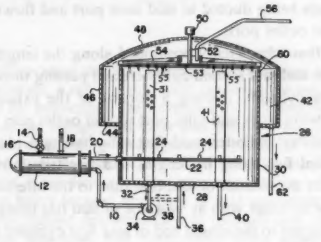
(d) mixing said vapor phase (V_3), withdrawn from the top of said rectification zone, with said second portion of the liquid phase (L_2) from the step (a), cooling the resultant mixture by heat exchange with an external fluid, in the condensation step, so as to form said condensed liquid phase (L_1), and feeding said phase (L_1) to the step (a).

4,341,085

FREEZE CONCENTRATION APPARATUS AND METHOD

James A. Nail, Carol Stream, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Mar. 4, 1981, Ser. No. 240,608
Int. Cl.³ F25J 9/04
U.S. Cl. 62—124 **7 Claims**



1. Apparatus for freeze concentrating an aqueous liquid mixture comprising:

a freeze exchanger;

a first liquid conduit communicating with the freeze exchanger for feeding an aqueous liquid mixture to the freeze exchanger for indirect heat exchange therein with a cold fluid fed to the freeze exchanger;

a vessel having an open top and an outwardly spaced shell means surrounding the upper part of the vessel, and extending above the vessel top, defining an annular space for collecting washed ice which is withdrawn from the vessel;

a second liquid conduit communicating with the freeze exchanger and the vessel for feeding an aqueous liquid mixture containing ice from the freeze exchanger to the vessel in which the ice floats on top of aqueous liquid mixture in the vessel;

means for withdrawing washed floating ice from the vessel and delivering it to the vessel annular space;

a third liquid conduit communicating with the first liquid conduit and with the vessel for withdrawing aqueous liquid mixture from the vessel; and

a fourth liquid conduit communicating with the vessel for feeding aqueous liquid mixture thereto.

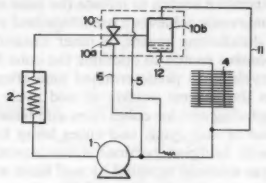
4,341,086

REFRIGERATION SYSTEM

Heiichiro Ishii, Toda, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1980, Ser. No. 194,552
Int. Cl.³ F25B 41/04
U.S. Cl. 62—225 **9 Claims**

2. A refrigeration system having a compressor, a condenser, an expansion valve and an evaporator which are connected to each other in the sequence, which refrigeration system is characterized in that said expansion valve is comprised of an expansion valve portion and a gas-liquid separating portion, said expansion valve portion being adapted to receive a refrigerant from said condenser and have said refrigerant subjected to adiabatic expansion there, said gas-liquid separation portion including means for receiving a mixture of a liquid refrigerant from the condenser and a gaseous refrigerant generated therefrom, separating said mixture into a liquid phase refrigerant and a gas phase refrigerant, and introducing the liquid refrigerant to an inlet of the evaporator and the gaseous refrigerant to an outlet of said evaporator, and said expansion valve portion having a body which is partitioned by a partition member having an opening to form said expansion valve portion and



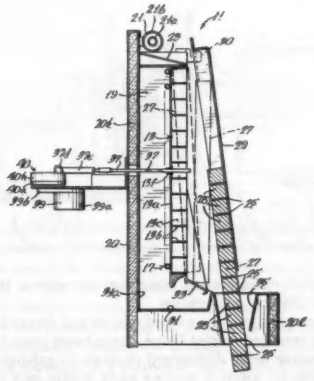
said gas-liquid separating portion integrally with each other, said expansion valve portion including a diaphragm fixed at an end portion of said body, a rod having an end fixed to said diaphragm, a spherical member fixed to another end of said rod and a spring biasing said rod through said spherical member, and said gas-liquid separating portion including a gas-liquid separating strainer.

4,341,087

AUTOMATIC ICE CUBE MAKING APPARATUS

Leon R. Van Steenburgh, Jr., Denver, Colo., assignor to Mile High Equipment Company, Denver, Colo.

Filed Apr. 8, 1981, Ser. No. 252,482
Int. Cl.³ F25C 1/04
U.S. Cl. 62—233 **21 Claims**



1. An ice cube maker comprising a vertically disposed flat plate having refrigeration evaporator coil mounted on one side thereof in good heat exchange relation therewith and lattice forming cube molds on the other side thereof, said lattice including horizontally and vertically extending intersecting walls forming sidewardly opening pockets within which water may be frozen to form ice cubes, means supplying water across the top of said plate so the water traverses said lattice, means delivering refrigerant liquid to said coil to freeze water to form ice cubes in said lattice with bridging portions forming a slab of ice including said cubes, means for alternatively supplying hot gas to said coil to separate said slab from said plate during an ice harvesting period, probe means for applying a horizontal force to said slab inwardly of the edges to displace said slab from said lattice, said probe applying a predetermined limited force sufficient to displace said slab when completely sepa-

rated from said lattice but less than that which would fracture the bridging portions of said slab.

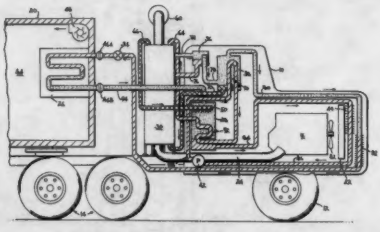
7. In a cube ice making machine the combination comprising a refrigeration system including a compressor and an evaporator with means distributing a low pressure liquid refrigerant from said compressor to said evaporator, an ice cube forming lattice in good heat transfer relation with said evaporator and means circulating water to said lattice to be frozen into cubes, a pressure responsive switch to initiate the cube making cycle when said compressor achieves a predetermined reduced pressure in said distributing means, a timer controlled by said pressure responsive switch to continue the cube freezing portion of said cycle for a predetermined time after which said timer initiates the harvest portion of said cycle, mechanical means for displacing said ice cubes from said lattice during the harvest portion of said cycle, said cubes being formed into a slab of ice with bridging portions interconnecting rows of cubes, a hot gas solenoid actuated by said timer at the start of the harvest portion of said cycle to deliver hot gas from said compressor to said evaporator and terminate distribution of said liquid refrigerant to said evaporator, said mechanical means applying a force against a central portion of said slab of ice to overcome the capillary forces retaining said slab in said evaporator after said hot gas has melted the ice retaining said slab to said lattice.

4,341,088

HIGHWAY VEHICLE EXHAUST GAS REFRIGERATION SYSTEM

Viung C. Mei, 129 Brentwood Dr., Oak Ridge, Tenn. 37830; Zalman Lavan, 947 Ridge Ct., Evanston, Ill. 60202, and Sushil K. Chaturvedi, 7740 Enfield Ave., Apt. 103, Norfolk, Va. 23505

Filed Jun. 11, 1980, Ser. No. 158,562
Int. Cl.³ B60H *3/04*
U.S. Cl. 62—239 **6 Claims**



1. A mobile refrigeration plant for use with a thermally insulated enclosure, comprising:

(a) a frame supported by a set of wheels and driven by a heat engine mounted on said frame, hot exhaust gases from said heat engine being dishcarged through an exhaust pipe;

(b) an eutectic solution cooling plate within said insulated enclosure, said plate containing a frozen fluid selected to maintain the temperature in said enclosure below a specified value;

(c) an absorption refrigeration system carried by said frame, said absorption refrigeration system including: a condenser; a generator-analyzer thermal energy being supplied to said absorption system by said exhaust pipe gases transferring heat to said generator-analyzer; an absorber heat exchanger, heat being transferred from said condenser and from said absorber heat exchanger to the atmosphere with the absorber heat exchanger and condenser mounted adjacent said engine whereby when said engine is running, ambient air is forced across said condenser and said absorber heat exchanger; a rectifier; an absorber tank; an expansion valve; and a solution pump, said solution pump directing fluid flow from said absorber tank to said generator-analyzer via said absorber heat exchanger; and

(d) exchange means for transferring thermal energy from said eutectic cooling place to said absorption refrigeration system via a fluid connection between the outlet of said expansion valve and said absorber tank whereby the temperature within said enclosure is maintained relatively constant and below said specified temperature despite the variation in engine load including complete shut down over a relatively long period of time; said generator analyzer comprising:

i. a first cylinder having both ends covered;

ii. a second cylinder having both ends covered with said first cylinder enclosed within and carried by said second cylinder, said first and said second cylinders defining a generally annular space between the walls of said cylinders and between the ends of each of said cylinders, said second cylinder defining an inlet port at one end and an outlet port at the other end, said hot exhaust gases being ducted to said inlet port and flowing from said outlet port;

iii. a first tube, axially positioned along the length of said first and said second cylinders and passing through said first cylinder, ducting a portion of the exhaust gases flowing from said inlet port to said outlet port through said first cylinder, said first tube having a plurality of radial fins along its length, said fins transferring heat from the interior of said first tube to the interior of said first cylinder with at least one of said fins being located adjacent to the closed end of said first cylinder adjacent to the outlet port of said second cylinder, said fins forming evaporation sites and increasing the evaporation area of said first cylinder, the lower portion of said interior volume defining the generator section of said generator-analyzer, the upper portion of said interior volume defining the analyzer section of said generator-analyzer; said first cylinder defining:

a first port used to join the interior of said first cylinder to a source of a relatively strong concentration of a refrigerant-absorbent solution, said first port spraying said strong refrigerant-absorbent solution upon at least one of said fins, said at least one of said fins increasing the impingement distance said spray droplets must tranverse before falling into the liquid phase of the refrigerant-absorbent solution within said first cylinder thereby reducing the carryover of absorbent flowing out of said generator section to said rectifier;

a second port used to join the interior of said first cylinder to the vapor section of said rectifier;

a third port used to join the interior of said first cylinder to the absorber tank of said refrigeration system, said third port ducting relatively weak refrigerant-absorbent solution from said generator section to said absorber tank; and

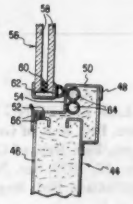
a fourth port used to join the interior of said first cylinder to the condensed vapor flowing from said rectifier

whereby the temperature of the relatively strong refrigerant-absorbent solution pumped to said generator-analyzer via said first port is raised by the heat emitted from said first tube, said fins and said first cylinder walls thereby evolving a gaseous mixture of refrigerant and absorbent, said gaseous mixture being free to pass upwardly to the top of said first cylinder and from there to said rectifier via said second port, said rectifier condensing an additional portion of said absorbent vapor, with the condensed absorbent vapor flowing back to said generator-analyzer via said fourth port while refrigerant vapor from said rectifier flows to said condenser.

4,341,089
SELF HEATING REFRIGERATOR

Fayez F. Ibrahim, and Arthur Perez, both of Niles, Mich., assignors to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 876,749, Feb. 10, 1978, abandoned. This application May 7, 1979, Ser. No. 36,661
Int. Cl.³ A47F 3/04
U.S. Cl. 62—246 3 Claims



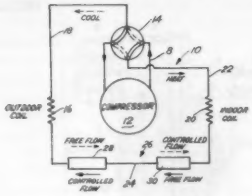
1. A refrigeration display case including a cabinet having an opening therein, a refrigerator door covering the opening and apparatus for preventing the formation of condensation at the junction of the refrigerator door and jamb for the door, said display case comprising: a refrigeration system for cooling the interior of said case, said system including an evaporator, a compressor, a condenser, and an expansion valve; said expansion valve being located upstream of said evaporator for expanding refrigerant delivered thereto through said evaporator for cooling said case, said compressor being located downstream of said evaporator for receiving the refrigerant expanded through said evaporator, said compressor compressing the refrigerant and delivering such refrigerant to a condenser located downstream of said compressor, said condenser condensing the refrigerant and being connected to a return conduit for returning the liquid refrigerant to the expansion valve; a portion of said return conduit being located adjacent the portion of said case frame surrounding said refrigerator door for heating and maintaining said case frame and said door jamb above the dew point during the operation of said refrigeration system thereby preventing condensation from accumulating thereon in the area surrounding said refrigerator door; the refrigerant being further cooled by heat transfer when passing through said portion of said return conduit adjacent to said case frame prior to returning to said expansion valve for expansion through said evaporator; and electrical resistance wires being located adjacent said case frame around said refrigerator door jamb, said electrical resistance wires being connected to an electrical source, said resistance wires being energized when refrigerant is not flowing through said return conduit for providing sufficient heat to raise said case frame above the dew point.

4,341,090
VARIABLE ORIFICE METERING

Rengaswamy Ramakrishnan, Fort Worth, Tex., assignor to Lennox Industries, Inc., Dallas, Tex.

Filed Jan. 26, 1981, Ser. No. 228,068
Int. Cl.³ F25B 13/00
U.S. Cl. 62—324.1 7 Claims

1. For use in a heat pump having a compressor, an indoor coil, an outdoor coil, means for porting refrigerant selectively from the compressor to either the indoor coil to heat an environment or to the outdoor coil to cool an environment, and regulating means between the indoor coil and the outdoor coil for regulating the refrigerant flow during the heating and the cooling modes of operation, characterized by the regulating means between the indoor coil and the outdoor coil comprising combination variable orifice valve means and check valve means for providing controlled fluid flow to the indoor coil in one mode of operation and substantially free fluid flow to the indoor coil in the other mode of operation, said combination variable orifice valve means and check valve means comprising a valve housing having a passage therethrough, a tubular valve body movable within said passage, said valve body having an orifice therein, said valve body having projections at one end for guiding the valve body in the passage, but providing substantially unrestricted flow between the valve housing and the valve body in said other mode of operation, and spring-

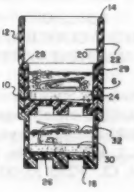


biased metering means including a plug movable relative to the orifice and cooperating with the orifice to vary the effective area of the orifice for controlling flow of fluid through the orifice for providing controlled flow in said one mode of operation, said variation of the effective area of the orifice being precisely controlled by the pressure difference acting across the plug.

4,341,091
CONTAINER METHOD AND APPARATUS

Buryl Minter, P.O. Box 655, Chugiak, Ak. 99567

Division of Ser. No. 88,192, Oct. 23, 1979, Pat. No. 4,267,700. This application Oct. 15, 1980, Ser. No. 197,039
Int. Cl.³ F25D 3/08
U.S. Cl. 62—372 24 Claims



20. Containers for transporting and chilling materials comprising a plurality of containers, a manifold in a bottom of each container, means for receiving ice in the bottom of each container and on the manifold, means for stacking a number of containers having manifolds therein, whereby the stacked containers and manifolds may be shipped, means for unstacking the containers, means for connecting a pressurized air supply to a manifold in a bottom of each container, an upward opening in each container for adding water, ice and materials to be cooled, means for supplying air to the manifold and thereby bubbling air through the water and ice and materials, covers for closing open ends of the containers and means for stacking another similar filled container on the cover.

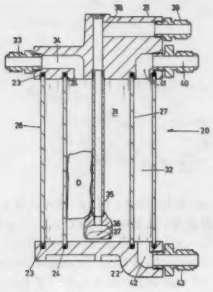
4,341,092
LIQUID MODULATOR

William G. Davis, Salisbury East, Australia, assignor to Liquid Modulators, Inc., Des Moines, Iowa

Filed Nov. 20, 1980, Ser. No. 208,542
Int. Cl.³ F25B 43/04
U.S. Cl. 62—475 2 Claims

1. A receiver/drier for a compression refrigeration system having a compressor, evaporator, condenser and expansion valve, said receiver/drier having a hollow body, end caps closing said hollow body, one of said end caps having an inlet

and outlet for passage of high pressure liquid therethrough from the condenser to the expansion valve, said outlet having an outlet tube extending through said body to terminate at an end adjacent the other of said end cap, said end of said tube being expanded to form an inlet covered by a screen, a bag of desiccant situated in said body adjacent said outlet tube to absorb moisture in said liquid, the opening of said enlarged end



being closely spaced from said other end cap to prevent blockage by the desiccant bag, an outer casing surrounding and spaced from said body to form a fluid chamber about said body, an inlet in said one end cap to receive fluid from the evaporator to flow into said fluid chamber, an outlet in said other end cap to deliver fluid to the compressor, whereby high pressure fluid and low pressure gas are in heat exchange relationships through the body of the receiver/drier.

4,341,093

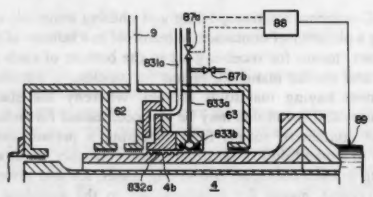
DEVICE FOR LEADING COOLING LIQUID OUT OF ROTARY ELECTRIC MACHINE WITH LIQUID COOLED ROTOR

Norio Oishi; Kouichi Okamoto; Shoji Furukado, all of Kobe, and Masaki Sakuyama, Ashiya, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1980, Ser. No. 212,043

Int. Cl.³ F25B *31/00*

U.S. Cl. 62—505 **7 Claims**



1. A device for conducting cooling liquid out of a liquid cooled rotor type rotary electric machine comprising:

a supplying and draining pipe coupled to the rotor shaft of said rotary electric machine for supplying cooling liquid to and draining cooling liquid from said rotor shaft;

an outlet chamber disposed around said supplying and draining pipe with a gap provided between said outlet chamber and said supplying and draining pipe for receiving cooling liquid discharged from said supplying and draining pipe and discharging cooling liquid thus received, said outlet chamber being filled with a shielding gas under pressure;

means for supplying a sealing liquid into said gap at one end of said outlet chamber; and

threads being cut in the outer wall of said supplying and draining pipe so as to pressurize said sealing liquid towards said outlet chamber; and

a stretchable member surrounding the outer wall of said supplying and draining pipe in such a manner that, when said supplying and draining pipe is stopped, said stretchable member is brought into close contact with the outer wall of said supplying and draining pipe to seal said sealing liquid.

4,341,094

CIRCULAR KNITTING NEEDLE

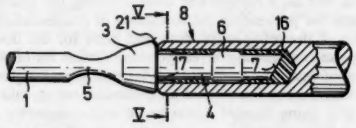
Helmut Heide, Menden, Fed. Rep. of Germany, assignor to Joh. Moritz Rump, Altena, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 102,949

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1978, 2853701

Int. Cl.³ D04B *35/02*

U.S. Cl. 66—117 **13 Claims**



1. A circular knitting needle, comprising a flexible intermediate portion of a viscous polyamide filament material and two rigid tips connected to said intermediate portion, each of said tips including a rod portion and a needle point, said rod portion being formed with an axial recess which is filled with a quick-binding adhesive material, said intermediate portion including an axially extending projection at each end thereof which is inserted into a respective recess so that said adhesive material surrounds said projection, said projection being formed with at least one radially outwardly projecting lug, said lug having an outer cylindrical surface, said recess being formed with at least two longitudinal contact surfaces extending radially inwardly from an inner surface thereof, said contact surfaces being in engagement with the outer cylindrical surface of said lug to provide a reliable contact between said recess and said projection.

4,341,095

STRETCHABLE GARMENT KNIT OF COTTON YARN

Dewey E. Poteat, Lenoir, N.C., assignor to Alba-Waldensian, Incorporated, Valdese, N.C.

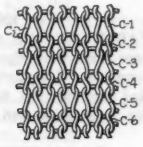
Filed May 2, 1980, Ser. No. 146,103

Int. Cl.³ A41B *9/04*

U.S. Cl. 66—177 **6 Claims**

1. A garment knit exclusively of the same size and type of cotton body yarn in successive courses of stitch loops and shaped to generally conform to the configuration of that portion of the body on which the garment is to be worn, said garment having the overall appearance of a conventional non-stretchable knitted garment and being characterized by having sufficient stretchability and recoverability to properly fit several body sizes heretofore requiring garments of different sizes, said garment comprising single courses of large stitch loops of said cotton body yarn alternating with single courses of small stitch loops of said cotton body yarn throughout at least the main body portion of said garment, said large stitch loops being

from about 1.1813 to 1.4437 times as long as said small stitch loops, and wherein the courses of large stitch loops provide



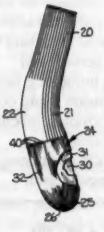
stretchability to said garment and the courses of small stitch loops provide density and opacity to said garment.

4,341,096

SOCK WITH TRIPLE LAYER FABRIC IN FOOT AND METHOD

Sam C. Safrit, Pfafftown; Roscoe M. Farrell, Pittsboro, and Harper Shields, Burlington, all of N.C., assignors to Kayser-Roth Hosiery, Inc., Burlington, N.C.

Filed Aug. 6, 1980, Ser. No. 175,932
Int. Cl.³ A41B *11/02*; D04B *7/04*
U.S. Cl. 66—185 **16 Claims**



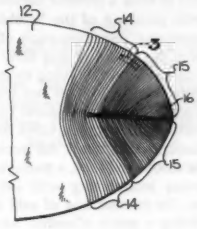
1. In a sock including a leg portion knit of successive courses including a predetermined number of stitch loops forming wales in successive courses, and a foot portion knit integral with said leg, said foot portion including toe, heel, sole, and upper and lower instep areas with said toe area including a closure seam, the improvement wherein at least a substantial portion of said foot portion is provided with improved cushioning characteristics and comprises triple layer fabric including an inner layer, an intermediate layer, and an outer layer each including forward ends connected together by said toe portion closure seam and rear portions integrally knit with the remainder of the sock.

4,341,097

HOSIERY ARTICLE WITH A REINFORCED TOE WITH VARYING DENSITY

Edward L. Cassidy, Sr.; William B. Cothran, both of Burlington, and Sam C. Safrit, Pfafftown, all of N.C., assignors to Kayser-Roth Hosiery, Inc., Burlington, N.C.

Filed Jul. 21, 1980, Ser. No. 170,698
Int. Cl.³ A41B *11/02*
U.S. Cl. 66—187 **6 Claims**



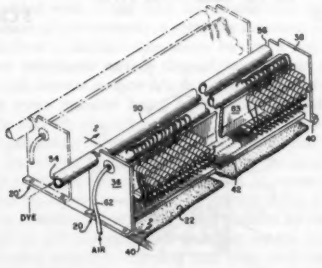
2. A hosiery article with a reinforced toe of progressively increasing density including a foot with a toe pocket, said toe pocket being integrally knit with said foot at one end and being closed at the other end thereof, said foot and toe pocket being knit of a body yarn and forming successive courses extending throughout said foot and toe pocket, and a reinforcing yarn knit in plated relationship with said body yarn in certain courses of a first group of courses adjacent said one end of said toe pocket, said reinforcing yarn being knit in plated relationship with said body yarn in certain courses of a second group of courses adjacent said closed end of said toe pocket, said certain courses of said first group of courses being spaced further apart than said certain courses of said second group of courses, the density of the knit fabric in said first group of courses being greater than the density of the knit fabric in the adjacent foot portion and being less than the density of the knit fabric in said second group of courses so that the density of the knit fabric of said toe pocket increases from the adjacent foot portion to the closed end of said toe pocket.

4,341,098

JET PATTERN DYEING OF MATERIAL, PARTICULARLY CARPET

Billy J. Otting, La Fayette, Ga., assignor to Otting Machine Company, Inc., La Fayette, Ga.

Continuation of Ser. No. 85,943, Oct. 18, 1979, abandoned. This application Feb. 24, 1981, Ser. No. 237,577
Int. Cl.³ D06B *1/02, 11/00*
U.S. Cl. 68—205 R **21 Claims**



1. Apparatus for pattern dyeing a continuously moving carpet web comprising means for conveying the carpet contin-

uously along a substantially horizontal path past a dye applicator station;

at least one dye applicator at said station positioned above the path of said carpet web and extending across the width of the carpet web transverse to the direction movement of the carpet web;

each applicator including at least one dye manifold adapted to be maintained under pressure and at least one air manifold adapted to be maintained under a pressure, a plurality of dye delivery tubes, each tube having an inlet end and an outlet end and at least a portion thereof which is flexible so as to permit pinching of the flexible portion, a pinch tube valve assembly receiving each of said flexible portions for selective control of dye flow through the tube, each of said delivery tubes having its inlet end connected to a dye manifold and its outlet end supported above the path of the carpet web and adjacent thereto;

said valve assembly comprising a valve block having a bore extending through said block for receiving the flexible portion of the associated tube, a passageway in said block, said passageway intersecting with said bore at a right angle thereto, the intersection of said bore and said passageway defining a pinch chamber, an electrically operated pneumatic valve connected to an air manifold, an intermediate block portion member supported at one end to said valve block and supporting at its other end said pneumatic valve, an air chamber formed between said other end of said intermediate block portion and the pneumatic valve, said intermediate block portion including a central chamber communicating with said air chamber, piston means within said central chamber having a rod section at one end selectively reciprocal in said passageway between a first position and a second position, a freely floating ball disposed in said passageway between one end of the rod section and the flexible portion of the associated tube for pinching the flexible tube into a closed condition in response to actuation of said pneumatic valve and positioning of said rod section in its second position,

said pinch chamber having a flattened wall portion circular in shape and being formed in said bore opposite the intersecting passageway and said flattened wall portion being in a plane perpendicular to said intersecting passageway so as to allow expansion of said tube upon pinching thereof; and

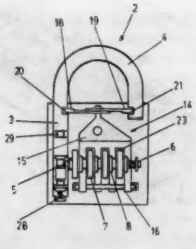
controller means for selective actuation of the pinch tube valve assembly as the carpet web is conveyed past the applicator station to effect dyeing of the carpet web in the desired pattern.

4,341,099

CODE CHANGING SYSTEM FOR COMBINATION PADLOCKS

Jose P. Garro, Irun, Spain, assignor to Talleres de Escoriaza S.A., Irun, Spain

Filed Jun. 30, 1980, Ser. No. 164,080
Claims priority, application Spain, Jul. 2, 1979, 482.109
Int. Cl.³ E05B *37/00, 37/06*
U.S. Cl. 70—25 **5 Claims**



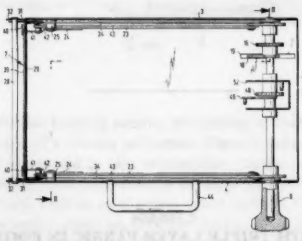
1. In a combination padlock of the type having a body, a code mechanism comprising an axially movable shaft having digit display wheels mounted thereon and bushings spring biased into engagement with the wheels, said bushings each having a generally circular periphery with a flattened portion, a locking element movable between an unlocking and a locking position by said bushings, and a shackle having a long leg retained in the body and a short leg for entering a body aperture when the shackle is oriented to the locking position and closed, the improvement comprising means on said long leg for engaging the end of the shaft and causing it to move axially when the shackle is oriented to a position other than the locking position and pressed into the body, said axial movement of the shaft causing said bushings to become released from the wheels to allow the code to be changed.

4,341,100

PORTABLE CERTIFICATE MAGAZINE

Hermann Kohlhage, Paderborn, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Filed Jun. 28, 1979, Ser. No. 53,133
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1978, 2829584
Int. Cl.³ E05B *65/52*
U.S. Cl. 70—63 **10 Claims**



1. A portable magazine for a bank note dispenser comprising:

a housing having a cover;

a first key lock mechanism at least partially within the housing;

a second key lock mechanism at least partially within the housing;

a tripping mechanism capable of assuming an armed but untripped condition and a dis-armed, tripped condition;

indicator means associated with said tripping mechanism to show the condition thereof; and

a latch for locking and unlocking said cover;

the first key lock mechanism being connected to operate the latch and to trip the tripping mechanism to the dis-armed condition when operated;

the second key lock mechanism being connected to arm and re-arm the tripping mechanism.

4,341,101

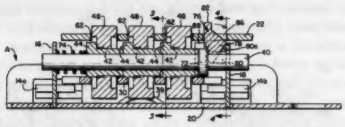
COMBINATION LOCKS

Lazlo Bako, Woodcliff Lake, N.J., assignor to Presto Lock, Inc., Garfield, N.J.

Filed Jul. 11, 1980, Ser. No. 167,429
Int. Cl.³ E05B *37/02*
U.S. Cl. 70—312 **8 Claims**

1. A combination lock including a plurality of combination elements disposed on a common axis in a casing for axial movement in unison in one direction to uncouple said elements from cooperating combination components in order to change the combination of the lock, a shift member for moving said elements axially, said shift member including an actuator portion extending through an opening in said casing and means provid-

ing a camming action between said shift member and said elements for causing said shift member to move said elements



axially in said one direction responsive to axial movement of said actuator portion in said opening in the opposite direction.

4,341,102

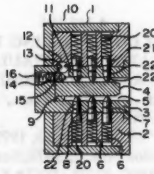
CONSTRUCTION FOR A CYLINDER LOCK AND KEY

Chung C. Ku, 63, Cheng Chou Rd., and Ching H. Yeh, 76, Hsin Yi Rd., both of Taipei, Taiwan

Continuation-in-part of Ser. No. 919,040, Jun. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 797,065, May 16, 1977, abandoned. This application Sep. 27, 1979, Ser. No. 79,463

Int. Cl.³ E05B *27/06*

U.S. Cl. 70—358 **1 Claim**



1. An improved construction for a cylinder lock adapted to be selectively opened or locked by means of a matching key, comprising an inner and a stationary outer cylinder, said outer cylinder being provided in a suitable housing, said inner cylinder being rotatably mounted in said outer cylinder, a plurality of bores provided through said cylinders and arranged radially from the central axis of said inner cylinder, a plurality of radial pin tumblers of various lengths and diameters being provided one each in each radial bore, a plurality of back plugs, each back plug being provided behind a radial pin tumbler in said bores, a plurality of spring means, one spring means being provided between said housing and each said back plug to urge said radially disposed pin tumblers toward the axis of said inner cylinder, a radial bore being additionally provided at the rearmost portion of said inner cylinder, a circular recess being provided at the rearmost portion of said outer stationary cylinder, a ball being provided within the chamber constituted by said rearmost radial bore and said circular recess, the size of said circular recess being smaller than a half of the diameter of said ball, a longitudinal bore being provided in said longitudinal bore, a longitudinal spring means being provided between the bottom of said inner cylinder and longitudinal pin tumbler to urge said longitudinal pin tumbler to cause said ball to be clamped in the cavity between the inner and outer cylinders, a center post being longitudinally provided in said inner cylinder to constitute a circular central bore therebetween, a key post being provided in said circular central bore and disposed between said center post and the inner surface of said inner cylinder so that when said matching key is inserted into said circular central bore, each of the plurality of radial pin tumblers will be raised by the correct amount to the top thereof and being exactly flush with the outer surface of the inner cylinder, and the longitudinal pin tumbler will be urged backward to allow the clamped ball to fall away from the cavity in the outer cylinder, and by engagement of the key with said key post the inner cylinder will rotate in response to mutual rotation of said key, said matching key being characterized in that the shank thereof is round, hollow, and of approximately the same diameter as the inside diameter of said circular central bore so that said key may be inserted over said center post, said matching key being provided with a plurality of depressions of various diameters and depths, each depression corresponding to one of said plurality of radial pin tumblers and adapted for raising each of said radial pin tumblers the correct amount to effect opening of said lock, and the end of said shank being tapered and having disposed therein an indentation for engaging with a key post provided in said lock.

4,341,103

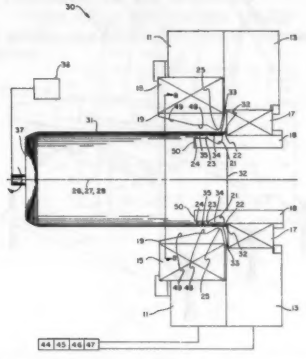
SPIN-NECKER FLANGER FOR BEVERAGE CONTAINERS

Eduardo C. Escallon, Muncie, Ind., and Paul S. Marsh, East Lansing, Mich., assignors to Ball Corporation, Muncie, Ind.

Filed Sep. 4, 1980, Ser. No. 183,868

Int. Cl.³ B21D *19/12*

U.S. Cl. 72—70 **2 Claims**



1. Apparatus for beading the end portion of a substantially cylindrical canbody having a terminal end edge at said end portion, comprising: means for rotating said canbody; a rotatably mounted inner mandrel having a circumferential arcuate groove therein defining a concave arcuate forming surface terminating at spaced apart first and second end zones, said rotatably mounted inner mandrel being capable of engaging said cylindrical canbody over a major portion of a sector of the circumference of said canbody, said first end zone having a first diameter and said second end zone having a second diameter greater than said first diameter, said inner mandrel extending from said first end zone in a substantially cylindrical shape of said first diameter, said inner mandrel being positionable within said canbody with said second end zone located adjacent to the terminal end edge of said canbody and said first end zone located within said canbody, said inner mandrel being provided with a can stop for establishing the correct axial position of said canbody; a rotatably mounted outer mandrel of a hollow cylindrical-like shape having a convex rib on the inner peripheral surface thereof, said convex rib defining an arcuate convex surface which is shaped to receive said groove, said outer mandrel being positionable around said canbody with said rib aligned with said groove; mounting means for independently mounting each of said inner and outer mandrels for movement toward and away from the longitudinal axis of said canbody; and operating means to move said inner and outer mandrels in opposite directions along a plane substantially coextensive with the plane defined by the terminal end edge of said canbody, said operating means comprising a first actuating means to translate said inner and outer mandrels in opposite directions into contact with the peripheral surface of the canbody; a second actuating means to translate said inner mandrel away from the longitudinal axis of said canbody and through the plane of said canbody thereby deforming said

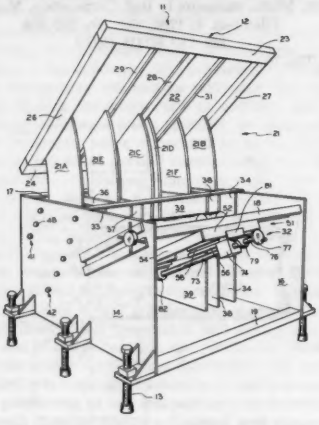
terminal end edge and the immediately axial end portion outwardly to an increased diameter; a third actuating means to translate said outer mandrel toward the longitudinal axis of said canbody thereby deforming said end portion inwardly to a decreased diameter; and a fourth actuating means to translate said inner and outer mandrels to positions which are coaxial with said canbody thereby allowing removal of said canbody.

4,341,104

PRESS BRAKE PLATE LIFTER TABLE

David J. Jarman, PO 181/RR #3, Aurora, Ind. 47001

Filed Nov. 19, 1979, Ser. No. 95,335
Int. Cl.[3] B21D *5/01*
U.S. Cl. 72—389 11 Claims



1. In a press brake plate lifter table of the type having a support surface for supporting material to be formed in said press brake, said support surface having a horizontal position and an angular position, and hydraulic cylinder means for moving said surface between said horizontal position and said angular position, the improvement comprising:

means for moving said hydraulic cylinder means toward or away from said support surface to vary said angular position,

said moving means including threaded rod means;

handle means for rotating said threaded rod means;

plate means threadably associated with said rod means and moving responsive to the rotation of said rod means; and

means for pivotally attaching said hydraulic cylinder means to said plate means.

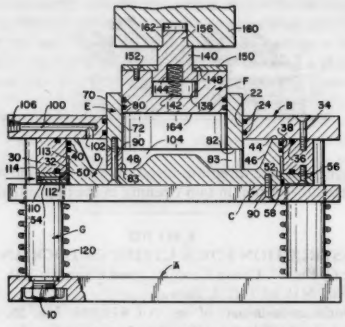
4,341,105

FORCE MULTIPLIER FOR PUNCH PRESSES

Steven J. Gerrick, Jr., 6816 Parma Park Blvd., Parma Heights, Ohio 44130

Filed Sep. 8, 1980, Ser. No. 185,198
Int. Cl.[3] B21J *9/12*
U.S. Cl. 72—453.02 5 Claims

1. A force multiplier for a punch or arbor press comprising in combination a base plate, a top plate and pillars holding said plates in rigid vertically spaced relationship, a platen member between said plates and movably guided by said pillars, means biasing said platen upwardly, a cylinder of a first diameter extending downwardly from the lower surface of said upper plate, a first piston member slidable in said cylinder and at its lower surface abutting the upper surface of said platen, said upper plate having a cylindrical opening therethrough of a second diameter less than said first diameter, a sleeve slidable in said opening and having an inner cylindrical wall of a third diameter less than said second diameter, a second piston slidable in said sleeve and extending above said sleeve, the space defined by said cylinder and said pistons being filled with a



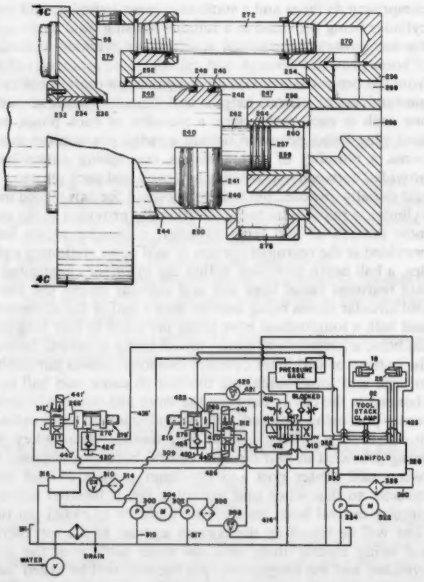
hydraulic fluid whereby forces on said second piston will exert through said hydraulic fluid a force downwardly on the platen greater than the force on the second piston.

4,341,106

APPARATUS FOR CONTROLLING THE MOVEMENT OF A RECIPROCATORY HYDRAULICALLY DRIVEN ELEMENT OF A METAL FORMING MACHINE

Kenneth P. Hackett, Nashville, Tenn., assignor to Gleason Works, Rochester, N.Y.

Division of Ser. No. 787,056, Apr. 13, 1977, Pat. No. 4,197,757.
This application Nov. 2, 1979, Ser. No. 90,665
Int. Cl.[3] B21C *23/08, 27/00;* F16B *15/08*
U.S. Cl. 72—453.07 4 Claims



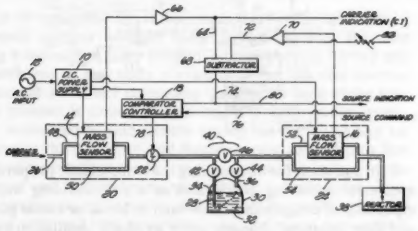
1. A method for providing two-speed movement of a reciprocatory hydraulically driven element of a metal working machine comprising the steps of introducing at respective

inlets hydraulic fluid at a first pressure substantially simultaneously into first and second chambers of different cross sectional areas as viewed in a plane that is substantially perpendicular to the direction of reciprocatory motion of said element and which receive therein respective first and second working faces of said element and thereupon cause said chambers to be in fluid communication with one another at a location other than their respective inlets to thereby exert a force against said element to move the same in a direction that tends to move one of said faces out of its respective chamber, while continuing the aforesaid introduction of hydraulic fluid introducing at a separate and larger inlet hydraulic fluid at a second and lesser pressure into that chamber having the larger cross sectional area under flow conditions that tend to equalize the pressure within said chambers when said chambers are not in fluid communication with one another.

4,341,107
CALIBRATABLE SYSTEM FOR MEASURING FLUID FLOW

Richard F. Blair, Fountain Valley, and Ralph Beazley, Rancho Palos Verdes, both of Calif., assignors to Tylan Corporation, Carson, Calif.

Filed Oct. 14, 1980, Ser. No. 196,410
Int. Cl.³ G01F *1/74, 25/00*
U.S. Cl. 73—3 **6 Claims**



1. A calibratable control system for accurately metering the amount of a predetermined liquid vaporized by a carrier gas passing therethrough independent of temperature and pressure changes, comprising:

a mixing station for forming a mixture of said carrier gas and vaporized liquid;

a flow controller comprising an inlet for said carrier gas, and an outlet, a first mass flow sensor connected between said flow controller inlet and outlet generating a first signal in correspondence to the mass flow rate of said carrier gas therethrough, and an adjustable valve controlling flow through said outlet to deliver carrier gas to said mixing station;

a flowmeter comprising an inlet for receiving said mixture from said mixing station, and an outlet therefor, and a second flow sensor connected between said flowmeter inlet and outlet generating a second signal in correspondence to the mass flow rate of said mixture therethrough;

each of said mass flow sensors comprising a sampling tube and, wound on said tube, heating and temperature sensing wires providing an output voltage as a function of mass flow independent of ambient temperature and pressure changes;

means for comparing said first and second signals to yield a third signal representing the mass flow rate of said vaporized liquid;

means for generating a command signal in accordance with a predetermined mass flow rate of said vaporized liquid;

means for comparing said command signal to said third signal;

means for adjusting said flow controller valve in accordance with any difference between the command signal and said third signal whereby to minimize or eliminate said difference;

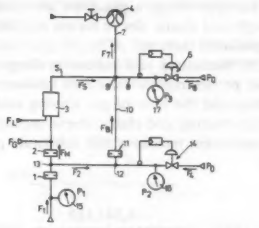
means for diverting carrier gas from the outlet of said flow controller to the inlet of said flowmeter, bypassing said mixing station, whereby said first signal corresponds only to the mass flow rate of said carrier gas through said second mass flow sensor; and

means for adjusting said first and/or second signal so as to cause said first and second signals to be equalized thereby calibrating said system and whereupon said carrier gas can be redirected to said mixing station.

4,341,108
MASS FLOW-DEPENDENT GAS ANALYZER WITH THROUGH-FLOW CONTROL DURING LOW PRESSURE OPERATION

Heinz Warncke, Cologne; Melchior Kahl, Bergisch Gladbach; Hans H. Meyer, Dormagen, and Paul Schürmeyer, Neuss, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 8, 1980, Ser. No. 176,373
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1979, 2932436
Int. Cl.³ G01N *27/16*
U.S. Cl. 73—23 **6 Claims**



1. In a continuously operated gas analyser comprising a mass flow-dependent detector, consisting of:

(a) a suction device at the detector outlet;

(b) a low pressure controller connected to the detector outlet, which controller maintains the low pressure p_3, produced by the suction device, constant at the detector outlet with respect to the atmospheric pressure P_0;

(c) a first choke which is connected upstream of the detector in the measuring gas line; and

(d) a second choke which is connected parallel to the series connection of the first choke and the detector as a by-pass, the improvement comprising: a third choke connected upstream of the common gas entry into the first choke and the second choke and low pressure control means connected to the common connection point of the three chokes and including the second choke for sucking up air under atmospheric pressure at its inlet and maintaining its outlet pressure p_2 at a value which has a constant difference from the atmospheric pressure P_0.

4,341,109
METHOD AND APPARATUS FOR DETERMINING CIGARETTE FILTER ROD PRESSURE DROP

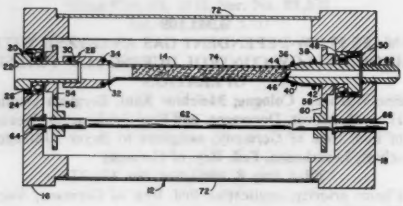
John D. Evans, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,626
Int. Cl.³ G01B *13/08*
U.S. Cl. 73—37 **6 Claims**

1. Apparatus for use with a gauging instrument, which measures and indicates the circumference of articles by means scanning the surface of the articles, and for determining in cooperation with said gauging instrument substantially true pressure drop measurement of nonwrapped and soft wrapped

filter rods when the circumference of said filter rods is compressed for such pressure drop measurement by an encapsulation method, said apparatus comprising:

elastic sleeve means for receiving therewithin the entire length of a filter rod, and adapted to encapsulate said filter rod by close sealing adherence to and predetermined compression of the circumferential surface of said filter rod and thereby form a substitute profile on the profile of said filter rod, said substitute profile providing a reference surface to be measured;



means for supporting said elastic sleeve means in said apparatus;

means for generating a gas flow at a predetermined rate through said elastic sleeve means and through a filter rod encapsulated therein;

means for measuring and indicating the pressure difference at said predetermined flow rate between the flow of gas entering and the flow of gas leaving said filter rod; and

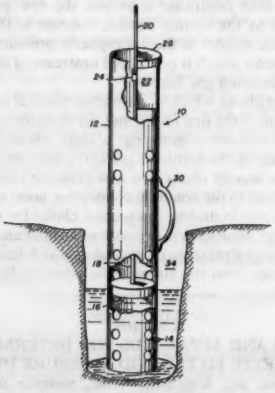
means for rotating said elastic sleeve means while said gauging instrument measures said substitute profile circumference.

4,341,110

PERCOLATION TESTING METHOD AND APPARATUS

Philip M. Block, 58 Fleetwood Rd., Newington, Conn. 06111

Filed Jun. 19, 1980, Ser. No. 161,139
Int. Cl.³ G01N *15/08*
U.S. Cl. 73—38 **4 Claims**



1. Apparatus for measuring the rate of change of the level of fluid in an excavation in a porous medium comprising:

a perforated tubular housing having an axis;

float means positioned for axial movement within said tubular housing;

elongated rod means, said rod means being affixed at a first end to said float means, said rod means having a recording medium receiving portion adjacent a second end thereof; and

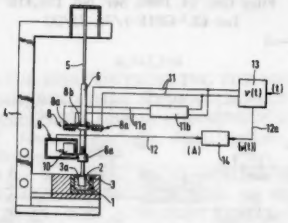
recording means, said recording means being removably supported within said housing at a first end thereof, said recording means including timer means and means controlled by signals produced by said timer means for periodically marking the recording medium, said recording means further including guide means for said rod means second end whereby the recording medium is juxtapositioned to said recording means marking means, the points at which the recording medium is marked by said marking means being a function of the position of said float means in said housing and said timer means output signals.

4,341,111

PROCESS AND APPARATUS FOR DETERMINING THE VISCO ELASTIC CHARACTERISTICS OF FLUIDS

Dieter Husar, Bad Homburg, Fed. Rep. of Germany, assignor to Fresenius AG, Bad Homburg, Fed. Rep. of Germany

Filed Mar. 4, 1980, Ser. No. 127,987
Int. Cl.³ G01N *11/10, 33/48*
U.S. Cl. 73—64.1 **27 Claims**



1. In a process for determining the visco-elastic properties of specimens including fluids and/or a polymerizing mixture, especially of coagulating fluids such as blood or blood plasma, and their temporal changes, using an elastic oscillation system including said specimen, the natural resonant frequency of said system changing as said specimen properties change,

the improvement characterized by:

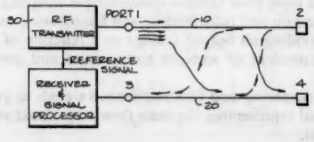
monitoring at least the changing frequency position of the resonant frequency of said oscillation system occurring as said specimen properties change for determining specimen elasticity changes.

4,341,112

MEASUREMENT OF SOIL MOISTURE

Neilson A. M. Mackay, and John C. Beal, both of Kingston, Ontario, Canada, assignors to Queen's University at Kingston

Filed Jun. 23, 1980, Ser. No. 162,093
Claims priority, application Canada, Jun. 22, 1979, 330390
Int. Cl.³ G01N *27/02*
U.S. Cl. 73—73 **7 Claims**



1. A method of measuring the moisture content of bulk material comprising:

(a) placing a length of leaky co-axial cable in the bulk material so as to be buried therein and spaced from an electromagnetic sensor in the region of interest;

(b) injecting a signal of high frequency electro-magnetic energy into the cable; and

(c) measuring at least one of phase and time of arrival of the signal at the sensor with respect to the injected signal and therefrom determine the moisture content of the material.

4,341,113

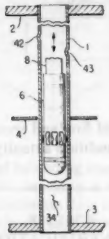
INSPECTION SYSTEM FOR HEAT EXCHANGER TUBES

James E. Gutzwiller, Jr., Forest, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Aug. 8, 1980, Ser. No. 176,427

Int. Cl.³ G01B *5/28*

U.S. Cl. 73—105 **7 Claims**



1. In an apparatus for inspecting a heat exchanger tube, a composite scanner adapted to be drawn through the tube having a cylindrical body portion, a flexure spring having one end anchored to said body portion adjacent its outer circumference and a free end contacting the interior wall of the tube as the scanner is drawn therethrough, a strain gauge operatively connected to said flexure spring having a winding responsive to the flexing of said flexure spring generating a first signal corresponding to the response of said winding to the flexing of said flexure spring, and an eddy current sensor having a winding incorporated in said scanner electromagnetically coupled with said tube generating a second signal corresponding to changes in said electromagnetic coupling as said scanner is drawn through said tube.

4,341,114

APPARATUS FOR BURNOFF OF A RESISTOR, IN PARTICULAR OF A HOT WIRE IN AN AIR FLOW RATE METER OF AN INTERNAL COMBUSTION ENGINE

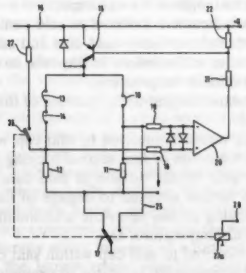
Gunther Plapp, Filderstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 30, 1980, Ser. No. 154,688

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929434

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—118 **11 Claims**



1. An apparatus for burnoff of deposits from at least two resistors of an air flow rate measurement circuit for an internal combustion engine, in which the at least two resistors are normally connected in a parallel arrangement in a first electric current circuit controlled by an electric current control device during a measurement operation, wherein the apparatus comprises:

a second electric current circuit which is different from the first electric current circuit; and

switch means for switching the at least two resistors in a series arrangement into the second electric current circuit during a burnoff operation.

4,341,115

METHOD AND APPARATUS FOR MONITORING STRUCTURAL AND MECHANICAL PROPERTIES OF DRILLING MUD

Stanislav A. Alekhin, Chilanzar, kvartal 24, dom 53, kv. 89; Vitold M. Bakhir, proezd Gaidara, dom 7-a, kv. 17, and Raisa I. Born, Chilanzar, kvartal 24, dom 53, kv. 89, all of Tashkent, U.S.S.R.

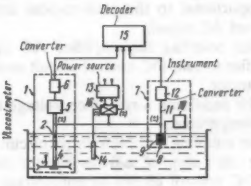
PCT No. PCT/SU79/00076, § 371 Date May 22, 1980, § 102(e) Date Apr. 21, 1980, PCT Pub. No. WO80/00726, PCT Pub. Date Apr. 17, 1980

PCT Filed Aug. 30, 1979, Ser. No. 195,423

Claims priority, application U.S.S.R., Sep. 22, 1978, 2665177

Int. Cl.³ E21B *47/00*

U.S. Cl. 73—153 **3 Claims**



1. A method of monitoring structural and mechanical properties of drilling mud, said method utilizing a power source having a pair of poles of opposite polarity and an electrode, said method including the steps of

determining the viscosity of drilling mud by using a viscosimeter having a driven sensitive element,

determining the shear strength of the drilling mud by using a shear strength measuring instrument having a driven sensitive element,

immersing the driven sensitive elements into the drilling mud, and

obtaining and comparing the data characteristics of the parameters measured, said method comprising the steps of

connecting said sensitive elements to the same pole of said power source;

connecting said electrode to the opposite pole of said power source and immersing said electrode in said drilling mud;

measuring current flowing between said electrode and said sensitive elements, thereby obtaining electrical signals proportional to the viscosity and shear strength of said drilling mud upon stabilization of said current;

determining a first ratio of said shear strength and viscosity signals;

reversing the polarity of the poles of said power source;

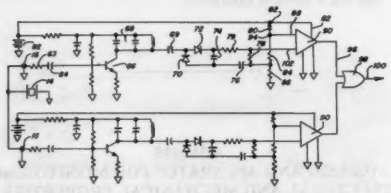
determining a second ratio of said shear strength and viscosity signals; and

determining the arithmetical mean of said first and second ratios.

4,341,116
LIQUID ABSENCE DETECTOR

Arnold C. Bilstad, Deerfield, and Michael Wicnienski, Antioch, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 6, 1980, Ser. No. 127,552
Int. Cl.³ G01N *29/02*
U.S. Cl. 73—290 V **13 Claims**



1. A device for detecting the absence of liquid in a liquid chamber, said device comprising

transmitter means for transmitting a signal through the chamber, and

receiver means for receiving the transmitted signal after its transmission through the chamber, said receiver means comprising

a receiving transducer for receiving an AC signal,

an amplifier,

a capacitor AC coupling said transducer to said amplifier,

DC control circuit means for receiving an AC signal and for generating an output voltage the amplitude of which is proportional to the peak-to-peak amplitude of the received AC signal,

means for coupling the amplified AC signal from said amplifier to said DC control circuit means,

a comparator,

means for providing a reference voltage to one input of said comparator,

means for coupling said DC control circuit output voltage to the other input of said comparator, the amplitude of said DC control circuit output voltage being proportional of the peak to peak amplitude of said amplified AC signal, and

said comparator output providing a liquid absence detection signal in response to the difference between said reference voltage and said DC control circuit output voltage.

4,341,117
ELECTRONIC THERMOMETER

Harold Goldstein, Westbury, and William Montren, Bay Shore, both of N.Y., assignors to Patient Technology, Inc., Hauppauge, N.Y.

Division of Ser. No. 392,961, Sep. 5, 1973, Pat. No. 3,978,325. This application Jun. 11, 1976, Ser. No. 695,688
Int. Cl.³ G01K *7/24*
U.S. Cl. 374—170 **5 Claims**

1. An electronic apparatus comprising:

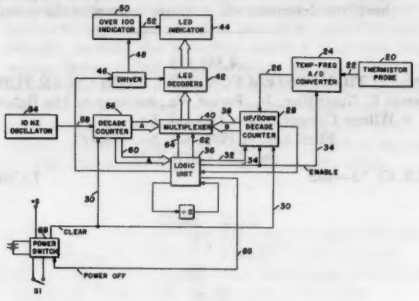
transducer means for varying an electric parameter in accordance with a condition being measured;

converter means for converting said electric parameter to a frequency-varying signal;

computing means connected to said converter means for computing an advance indication of said condition; and

display means for receiving and displaying said advance indication of said condition;

said apparatus further comprising control means for controlling said computing means to operate on said frequency-varying signal during first and second time periods to obtain first and second temperature measurements, respectively, said first and second temperature measurements being combined by said computing means to provide said computed advance indication; and

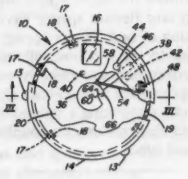


wherein the sum of said first and second time periods is less than the time said condition actually takes to reach its final value.

4,341,118
TEMPERATURE VERIFICATION APPARATUS

Howard T. Schobl, Coraopolis, Pa., assignor to Schobl Enterprises, Coraopolis, Pa.

Filed Jul. 28, 1980, Ser. No. 173,054
Int. Cl.³ G01K *5/72;* G01D *11/16, 13/24*
U.S. Cl. 116—221 **14 Claims**



1. Critical temperature verification apparatus comprising,

a case,

a cap connected to the top of said case,

a transparent window enclosed within said cap,

temperature responsive means mounted within said case having a portion of said temperature responsive means free to move in an arcuate path in response to temperature variation,

a rotatable cam connected to said free portion of said temperature responsive means within said case and adapted to rotate in response to temperature variation,

a temperature indicator connected to said cam and extending outwardly therefrom within said case and adapted to travel into view under said window in response to attainment of a preselected critical temperature,

first locking means integral with a portion of the lateral surface of said cam,

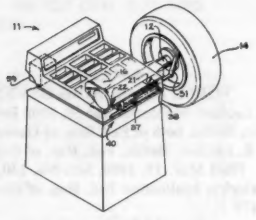
second locking means connected to said cap within said case and having a portion of said second locking means adapted to traverse said lateral surface of said cam upon rotation thereof and further adapted to engage in fixed connection said first locking means upon the attainment of said preselected critical temperature, and

stop means connected to said cap within said case adapted to engage said temperature indicator to prevent further movement of said temperature indicator in response to further temperature variation beyond said preselected critical temperature.

4,341,119
DATA INPUT SYSTEM FOR DYNAMIC BALANCING MACHINE

Bernie F. Jackson, Los Gatos, and Hoyt H. Nelson, Santa Clara, both of Calif., assignors to Nortron Corporation, Sunnyvale, Calif.

Filed Mar. 18, 1980, Ser. No. 130,083
Int. Cl.³ G01M *1/22*
U.S. Cl. 73—462 **11 Claims**



1. In a dynamic wheel balancing machine of a type having an elongate drive shaft for carrying a wheel at one end to be rotated therewith, an automatic data input device for detecting data for balancing a wheel, said input device comprising, in combination:

measurement means axially movable between retracted and advanced positions with respect to the plane of the adjacent rim of the wheel for measuring the displacement between said plane and a predetermined portion of said machine;

engaging means carried at the free end of said measurement means positionable to engage the rim of the wheel;

signal means coupled to the engaging means to generate an electric signal representative of the diameter of the wheel to be balanced, said signal means including

(1) a radius arm carried on the free end of said axially movable means, said arm being rotatable to engage the lip of the rim of the wheel and

(2) variable electric means coupled to sense radial rotation of said arm to define an angle between said arm when contacting the rim of the wheel and a line drawn between the axis of rotation of the wheel and the axis of rotation of said radius arm.

4,341,120
ULTRASONIC VOLUME MEASURING SYSTEM

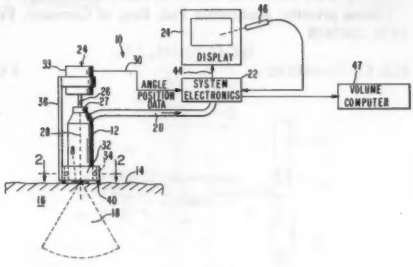
Weston A. Anderson, Palo Alto, Calif., assignor to Diasonics Cardio/Imaging, Inc., Salt Lake City, Utah

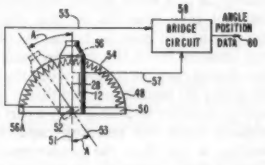
Filed Nov. 9, 1979, Ser. No. 92,903
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—618 **5 Claims**

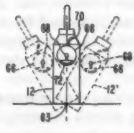
1. In an ultrasonic imaging system of the type adapted for examining bodily tissue or the like; said system including a transducer means interrogating said bodily tissue to be examined with an ultrasonic beam which is swept over an internal fan shaped sector of said tissue to be examined; means for determining from the reflected ultrasonic energy resulting from said beam the variations in acoustical impedance of said bodily tissue over the area of said sector and providing therefrom a reconstructed image of a cross-section of bodily tissue corresponding to said sector; said transducer means including a housing body, said body including a longitudinal axis approximately aligned with the plane of said fan-shaped sector and approximately symmetrically dividing the included angle of said fan, and said body being orientable with respect to the bodily tissue being examined to enable said fanshaped sector to intersect and thereby effect imaging of a desired cross-section of said tissue; the improvement enabling evaluation of the volume or shape of a three-dimensional portion of the tissue being examined, comprising:

means for determining the rotational angle between a reference position and a plurality of selected examining positions of said transducer body, upon said transducer body being rotated from said reference to said selected positions while at least one point of said longitudinal axis remains substantially spatially fixed, said means for determining comprising a shaft encoder means mounted to said body for providing a signal indicative of said rotational angle;

means for correlating the associated reconstructed images







with the said determined angles, whereby to generate a plurality of cross-sectional images of said three-dimensional tissue portion being examined, wherein the imaged tissue cross-sections include at least one common point, thereby to enable evaluation of the volume or shape of the said three dimensional tissue portion; and means for supporting said transducer body for rotation about said longitudinal axis.

4,341,121

METHOD AND APPARATUS FOR TESTING THE RESETTING CAPACITY OF SAFETY SKI BINDINGS WHICH ARE FOR EXAMPLE MOUNTED ON SKIS

Hannes Marker, Hauptstrasse 51-53, 8100 Garmisch-Partenkirchen, Fed. Rep. of Germany; Walter Knabel, Farchant, and Gerhard Eichweber, Kochel, both of Fed. Rep. of Germany, assignors to Hannes Marker, Garmisch-Partenkirchen, Fed. Rep. of Germany

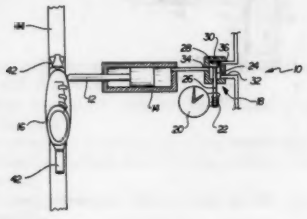
PCT No. PCT/EP79/00010, § 371 Date Oct. 22, 1979, § 102(e) Date Oct. 22, 1979, PCT Pub. No. WO79/00653, PCT Pub. Date Sep. 6, 1979

PCT Filed Feb. 20, 1979, Ser. No. 201,110

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807638

Int. Cl.³ G01L 5/03

U.S. Cl. 73—862.02 3 Claims



1. A method of testing the resetting capacity of a safety ski binding mounted on a support, comprising:

positioning a member in a rest position in the ski binding;

exerting a first constant force on the member in a release direction of the binding during constant time intervals; and

releasing the first force during time periods intermediate the constant time intervals so that the member is moved towards its rest position by the ski binding against a second constant force, the member returning to its rest position during the time periods when the resetting capacity of the safety ski binding is more than a predetermined value, and the member returning only a part of the way to its rest position when the resetting capacity of the safety ski binding is less than the predetermined value so that a residual distance remains at the end of each time period, the residual distances being summated during subsequent exertions of the first force to cause release of the safety ski binding.

3. An apparatus for testing the resetting capacity of a safety ski binding mounted on a support, the ski binding holding a member in a rest position, said apparatus comprising:

supporting means spaced from the support;

a pin mounted in the supporting means for movement towards and away from the member held in the ski binding;

means for moving the pin into engagement with the member to thereby exert a releasing force on the ski binding;

resistance means for applying a constant force counteracting movement of the pin when the ski binding urges the member towards its rest position; and

clock means for controlling said means for moving for spaced time intervals so that, during the time intervals, said means for moving exerts a first constant force on said pin to thereby move the member held by the ski binding and exert a releasing force on the ski binding, said ski binding urging the member against the resistance means towards its rest position during time periods intermediate the time intervals, the member returning to its rest position during the time periods when the resetting capacity of the safety ski binding is more than a predetermined value, and the member returning only a part of the way to its rest position when the resetting capacity of the safety ski binding is less than the predetermined value so that a residual distance remains at the end of each time period, the residual distances being summated during subsequent exertions of the first force to cause release of the safety ski binding.

4,341,122

FORCE MEASURING DEVICE

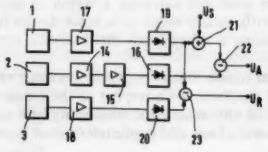
Gerhard B. Lechler, Mühlenstrasse 58, 1000 Berlin 46, and Otto G. Richter, Berlin, both of Fed. Rep. of Germany, assignors to Gerhard B. Lechler, Berlin, Fed. Rep. of Germany

Filed Mar. 13, 1980, Ser. No. 130,073

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1979, 2911479

Int. Cl.³ G01L 5/12, 5/16

U.S. Cl. 73—862.04 9 Claims



1. A device for measuring forces including:

a ball or roller bearing having concentric inner and outer rings for accommodating at least first and second rows of rolling elements therebetween,

first and second resistance strain gauges on said ball or roller bearing mounted at first (1) and second (3) measuring positions proximate said first row for sensing cyclic strains applied thereto,

a third resistance strain gauge mounted on said ball or roller bearing at a third measuring position (2) proximate said second row for sensing cyclic strains applied thereto,

said ball or roller bearing being adapted to absorb radial and axial forces applied thereto, said first, second and third strain gauges being adapted to change resistance and provide a signal in response to cyclic strains applied to said respective measuring positions,

first (17) and second (18) and third (14) amplifiers coupled to the output of said first, second and third strain gauges, respectively,

first (19), second (20) and third (16) rectifiers coupled to the outputs of said first, second and third amplifiers, respectively,

a compensator (15) coupled between the output of said third amplifier (14) and the input of said third rectifier (16) for compensating for bearing ratio percentages, and the apparent axial force resulting therefrom, with only radial forces acting on said first and second rows of rolling elements,

said compensator being adapted to reinforce the weaker signal of the signals proceeding from the first and third measuring positions, to which the radial forces are applied in the same direction, until said apparent axial force is eliminated, and

a subtractor (22) for subtracting said compensated signal at the output of said third rectifier (16) from the signal at the output of said first rectifier (19) to provide a different signal U_A corresponding to actual applied axial force.

4,341,123
TORQUE-MEASURING TAPE CASSETTE

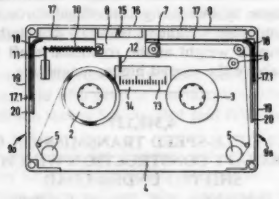
Reinhard Raemisch, Reichelsheim, and Arthur H. Hoffmann, Mannheim, both of Fed. Rep. of Germany, assignors to Koenig-Electronic Friedrich W. Koenig, Reichelsheim, Fed. Rep. of Germany

Filed Jul. 22, 1980, Ser. No. 171,418

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1979, 2930739; Aug. 10, 1979, 2932526

Int. Cl.³ G01L *3/16, 5/06*

U.S. Cl. 73—862.09 **10 Claims**



1. A torque-measuring tape cassette, comprising

a housing having a plurality of different exposed sides and a pair of hubs adapted to be rotated by the tape drive of a cassette tape machine; a movable component mounted in said housing for displacement in a path; a deflecting element provided on and displaceable with said movable component; a spring connected to said housing and to said movable component and resisting the displacement of said component; a tape trained about said deflecting element and having spaced ends connected to the respective hubs; a set of dials, including a plurality of dials each located and observable at a different one of said exposed sides; and a set of pointers, including a plurality of pointers each cooperating with one of said dials, one of said sets being provided on said housing and the other of said sets being movable with said component so that displacement of said component effected as a result of rotation applied to a respective hub and consequent pull on said tape, can be read off all of said dials as an indication of measured torque.

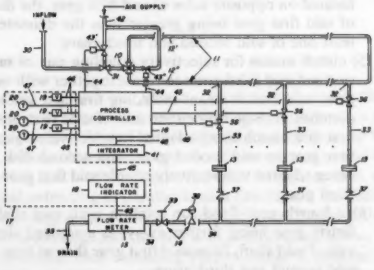
4,341,124
AUTOMATIC SAMPLING APPARATUS

Douglas N. Rodgers; Manfred Siegler, and David Y. H. Shen, all of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Nov. 10, 1980, Ser. No. 205,414

Int. Cl.³ G01N *1/10*

U.S. Cl. 73—863.01 **13 Claims**



10. The method of keeping solid particles suspended in liquid in a sampling apparatus comprising the steps of providing the liquid to a switching valve at the entrance of a manifold having two branches, and periodically exclusively directing the flow from the switching valve down one and then the other of the branches of the manifold.

4,341,125
DEVICES FOR EXTRACTING A SAMPLE OF FLUID FROM A HYDRAULIC CIRCUIT

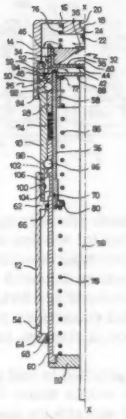
Roger Tardy, Nexon, France, assignor to Sofrance S.A., Limoges, France

Filed Nov. 17, 1980, Ser. No. 207,768

Claims priority, application France, Nov. 30, 1979, 79 29545

Int. Cl.³ G01N *1/14*

U.S. Cl. 73—863.25 **11 Claims**



1. A device for extraction of a sample of fluid from a hydraulic circuit having an extraction take-off, comprising:

a body provided with a ferrule which can be fitted on the take-off;

a perforator fixed to the ferrule and provided with at least one orifice capable of distributing the fluid into the body;

a container provided with a perforatable capsule and a filtering membrane;

a movable carrier capable of receiving the container, the carrier being displaceable from one to the other of two positions, comprising an extraction position where the capsule is perforated by the perforator and where the fluid penetrates into the container, and a non-extraction position where the capsule is not perforated by the perforator, and where the fluid flows outside the container;

first resilient return means tending to return the carrier towards the extraction position;

second resilient return means, of lesser force that the first resilient return means, tending to return the carrier towards the non-extraction position;

means for immobilising the carrier in the non-extraction position;

first releasing means capable of releasing the immobilising means;

second releasing means capable of releasing the first resilient return means; and

means defining a space and capable of: receiving a first predetermined volume of fluid, namely a rinsing volume, while the carrier is in the non-extraction position; operating the first releasing means and thus causing the displacement of the carrier towards the extraction position, receiving a second predetermined volume of fluid, namely a sample volume, which passes through the filtering membrane of the container; operating the second releasing means and thus causing the displacement of the carrier towards the non-extraction position;

and discharging outside the body the fluid coming from the perforator and the fluid rejected from the space.

4,341,126

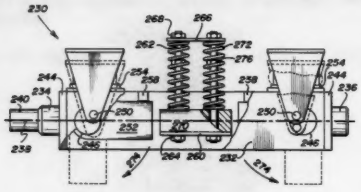
VARIABLE AMPLITUDE VIBRATORY APPARATUS

Hubert E. Thomas, 1406 El Camino Real, Euless, Tex. 76039

Continuation of Ser. No. 772,137, Feb. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 712,395, Aug. 6, 1976, abandoned. This application Aug. 21, 1979, Ser. No. 68,343

Int. Cl.³ F16H *33/00*

U.S. Cl. 74—61 **2 Claims**



1. A variable amplitude vibratory apparatus comprising:

shaft means supported for rotation about an axis;

first movable weight means mounted eccentricaly on the shaft means for rotation therewith for movement between a first relatively reduced eccentricity position and a first relatively increased eccentricity position with respect to the axis of rotation in response to a centrifugal force of rotation;

first guiding means attached to said shaft means for guiding the first movable weight means for movement between the first reduced eccentricity position and the first increased eccentricity position with respect to the axis of rotation wherein the guiding means for the first movable weight means includes first rod means mounted on the shaft means and extending outwardly substantially perpendicularly with the axis of rotation of the shaft means and slidably supporting the first movable weight means;

first stop means mounted on the first rod means for limiting maximum eccentricity of the first movable weight means;

first spring means connected between said first movable weight means and first guiding means, and biasing the first movable weight means toward the first relatively reduced eccentricity position for retaining the first movable weight means in the first reduced eccentricity position until the rotational shaft velocity increases above a first predetermined magnitude and for yieldably resisting progressive movement of the first movable weight means as said first movable weight means moves toward the first increased eccentricity position in response to increasing centrifugal force as rotational shaft velocity increases above the first predetermined magnitude wherein the first spring means includes at least one compression spring means mounted concentrically on the first rod means;

second movable weight means mounted eccentrically on the shaft means for rotation therewith for counterbalancing the first movable weight means and for movement between a second relatively reduced eccentricity position and a second relatively increased eccentricity position with respect to the axis of rotation wherein the second movable weight means comprises two weight members which are guided and supported for pivotal movement about two spaced axes which are substantially perpendicular to the rotational axis of the shaft means; p1 the center of mass of the second movable weight means being positioned on the opposite side of the shaft means from the center of mass of the first movable weight means;

second guiding means attached to said shaft means for guiding the second movable weight means for movement between the second reduced eccentricity position and the second increased eccentricity position with respect to the axis of rotation; and

second spring means connected between said second movable weight means and second guiding means, and biasing the second movable weight means toward the second reduced eccentricity position for retaining the second movable weight means in the second reduced eccentricity position until the shaft rotational velocity increases to a second higher predetermined magnitude and for yieldably resisting progressive movement of the second movable weight means as said second movable weight means moves toward the second increased eccentricity position in response to increasing centrifugal force so that the second movable weight increasingly counterbalances the first movable weight as the rotational shaft velocity increases above the second higher magnitude.

4,341,127

MULTIPLE-SPEED TRANSMISSION OF COUNTERSHAFT CONSTRUCTION WHICH CAN BE SHIFTED UNDER LOAD

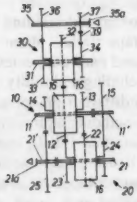
Enno Stodt, Heidenheim, Fed. Rep. of Germany, assignor to Voith Getriebe KG, Fed. Rep. of Germany

Filed Dec. 26, 1978, Ser. No. 973,020

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1978, 2800267

Int. Cl.³ F16H *3/10*

U.S. Cl. 74—333 **16 Claims**



1. A multiple speed transmission, comprising:

(A) a first and a second shift unit, each said shift unit comprising, respectively:

(1) a rotatable shaft, the rotatable shaft of said first shift unit being parallel to the rotatable shaft of said second shift unit;

(2) a first gear fixed for rotation with said shaft;

(3) a second gear on said shaft and rotatable with respect thereto;

(4) a third gear on said shaft and rotatable with respect thereto; said third gear having a different pitch diameter than said second gear, said second and third gears being located on opposite sides of said first gear, the diameter of said first gear being greater than the diameter of at least one of said second and third gears;

(5) clutch means for selectively coupling one of said second and said third gears to rotate together with said first gear, said clutch means including first and second disk clutches arranged on either side of said first gear, said first disk clutch being adapted to selectively couple said first gear to said second gear, said second disk clutch being adapted to selectively couple said first gear to said third gear;

(6) a fourth gear fixed for rotation with said shaft, said fourth gear being further away, as measured along the axis of said shaft, from said first gear than at least one of said second and third gears;

(B) said gears of both said shift units being, at least indirectly, in engagement such that said first gear of each said unit is in engagement with and defines a set of gears with said second gear of the other said unit, and said third gear

of each said unit is in engagement with and defines a set of gears with said fourth gear of the other said unit, whereby four engaging sets of gears are formed; and

(C) a reverse transmission connected to said first shift unit for reversing the direction of rotation of said shaft of said first shift unit, said reversing transmission comprising a third shift unit, said third shift unit including:

(1) a second shaft; a fifth gear fixed to said second shaft for rotation therewith; said fifth gear engaging said first gear of said first shift unit for rotation therewith;

(2) a sixth gear and a seventh gear located on and being rotatable with respect to said second shaft;

(3) second clutch means for selectively coupling one of said sixth and seventh gears to rotate with said fifth gear;

(4) first means for rotating said sixth gear, and thereby for rotating said fifth gear, in one direction when said second clutch means has coupled said fifth and said sixth gears; and

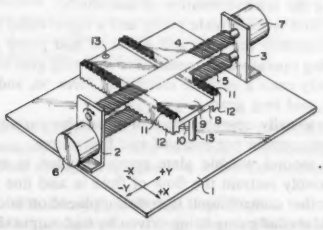
(5) second means for rotating said seventh gear, and thereby for rotating said fifth gear, in a second, opposite direction when said second clutch means has coupled said fifth and said seventh gear.

4,341,128

DEVICE FOR MOVING A SLIDABLE STAGE ON A TWO-DIMENSIONAL PLANE

Makoto Murakoshi, and Tamotu Yoshizawa, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kamagawa, Japan

Filed Jun. 13, 1980, Ser. No. 159,170
Claims priority, application Japan, Jun. 15, 1979, 54-75497
Int. Cl.³ G05G *11/00, 25/20*
U.S. Cl. 74—479 **11 Claims**



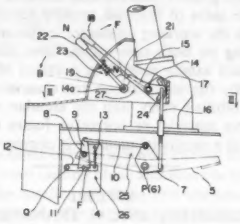
1. A device for moving a stage on a plane in X and Y directions as desired comprising a pair of parallel lead screws, a pair of driving means for independently driving the pair of lead screws, a movable stage having a first face opposed to said first lead screw and a second face opposed to said second lead screw and extending in parallel to said first face, a first helical rack extending perpendicular to said first lead screw on said first face of the stage and meshed with said first lead screw, and a second helical rack extending perpendicular to said second lead screw on said second face of the stage and meshed with said second lead screw, teeth of said second helical rack extending in the direction of intersecting with teeth of said first helical rack.

4,341,129

SYSTEM OF CHANGING TRAVELLING SPEED OF WORKING VEHICLE

Niro Bando, Sakai, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Mar. 27, 1980, Ser. No. 134,399
Claims priority, application Japan, Oct. 13, 1979, 54/141687[U]
Int. Cl.³ G05G *1/14, 5/04, 11/00*
U.S. Cl. 74—481 **5 Claims**



1. A system of changing the travelling speed of a working vehicle comprising;

a pedal (5) for operating a stepless speed-change means (4),

spring means (26) for normally spring-loading said stepless speed-change means (4) to the neutral position,

an operating unit for speed change (25) to interlockingly connect said stepless speed-change means (4) with said pedal (5),

a first manual lever (22) for operating said stepless speed-change means (4),

spring means (23) for maintaining said first manual lever (22) at its operated position,

cam means (27) adapted to permit said stepless speed-change means (4) to be operated in the speed increasing direction by said pedal (5) and adapted to prevent said stepless speed-change means (4) from being operated to its neutral position, and

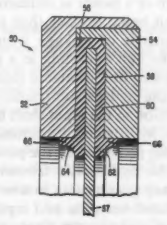
coupling means (16) to interlockingly connect said cam means (27) with said operating unit and said pedal for speed change (25).

4,341,130

DUST AND OIL SLINGER

Michael Shepherd, Indianapolis, and Robert C. Bremer, Jr., Brownsburg, both of Ind., assignors to Wallace Murray Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 908,135, May 22, 1978, abandoned. This application Feb. 26, 1979, Ser. No. 15,060
Int. Cl.³ F16F *15/10*; F16C *1/00, 3/00*
U.S. Cl. 74—574 **2 Claims**



1. A torsional vibration damper of the type having an annular inertia ring mass coupled to a rotatable disc by means of working elastomer, the outer periphery of the disc extending

into a complementary annular recess in the inertia ring mass, the working elastomer lining the interior portions of the said annular recess, the working elastomer surrounding and contacting the sides and the radially outermost periphery of the disc, the disc adapted to be coupled to a rotating shaft subject to torsional vibrations, the disc being of lesser axial extent than the inertia ring, the inertia ring mass, working elastomer, and disc acting in a known manner to lessen torsional vibrations of the shaft, the improvement comprising, an annular elastomer seal carried by the vibration damper, the seal being of an axial extent, as measured in a direction parallel to the axis of rotation of the damper, greater than the axial distance between the disc sides and the sides of the said annular recess, the seal being integral with the working elastomer in the annular recess, the seal extending on both sides of the disc, the seal not being bonded to said axially extending portions of the inertia ring mass, whereby the seal protects the elastomer in the annular recess by inhibiting entry into the annular recess of dust or other abrasive material or corrosive fumes or materials, the seal serving as a sacrificial member in corrosive environments.

4,341,131

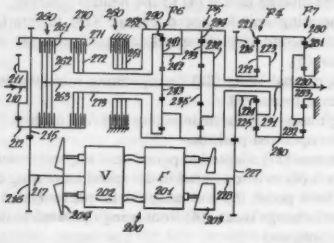
HYDROMECHANICAL TRANSMISSIONS

Frederic W. Pollman, Ames, Iowa, assignor to Sundstrand Corporation, Rockford, Ill.

Division of Ser. No. 825,844, Aug. 18, 1977, abandoned. This application Mar. 27, 1980, Ser. No. 134,614

Int. Cl.³ F16H *47/04, 37/06*

U.S. Cl. 74—687 **6 Claims**



1. A hydromechanical transmission having plural modes of operation with a shift between modes maintaining the power load on a power source for the transmission comprising, an output shaft, a planetary gear system including an element thereof providing a drive to said output shaft, an input shaft connectable to the power source, a hydrostatic transmission connectable to said power source and offset from the axis of said input and output shafts, said hydrostatic transmission including a pair of hydraulic units each with a displacement setting swash plate and with the angle of one of the swash plates being variable and with one unit connectable to the power source and the other unit connected to a first rotatable element of the planetary gear system, each of the units operating as either a pump or a motor at different times with the flow from the pump unit being greater than that flowing through the motor unit because of leakage which requires a larger displacement for the unit operating as a pump, means for hydraulically driving said first rotatable element of the planetary gear system from the hydrostatic transmission without direct mechanical connection to the input shaft in one mode of operation and with the hydrostatic transmission units capable of delivering full power provided by the power source, means for connecting both the hydrostatic transmission and the input shaft to the planetary gear system in a second mode of operation including a clutch between said input shaft and a second rotatable element of said planetary gear system, the unit functioning as a pump having a greater flow than the other unit at the end of said one mode and immediately prior to shift to said second mode in order to make up leakage, and means including gear ratios in the planetary gear system for maintaining a continuous transmission ratio and power flow through a mode shift with each hydraulic unit having its same displacement setting before and after shift including gearing means in said planetary gear system drivingly interconnecting said first and second rotatable elements to maintain a fixed speed relation therebetween during various speeds of operation in said one mode when said first element is free to rotate because of said clutch being disengaged, additional gearing means in said planetary gear system operative upon engagement of said clutch to convert a speed change in said first rotatable element to an increased speed of said second rotatable element whereby said second rotatable element can rotate at a greater speed after shift than before shift whereby said other unit operating as a pump after shift has an effectively larger flow after said shift to make up leakage and avoid the need for movement of the variable swash plate, said gearing means having gear ratios to provide substantially equal working pressure in and substantially equal speed differences between said units before and after shift between modes.

4,341,132

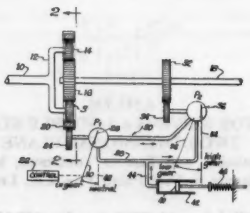
CONTINUOUSLY VARIABLE RATIO POWER TRANSMISSION

Clayton J. Burdick, 2814 Atadero Ct., Carlsbad, Calif. 92008

Filed Feb. 13, 1981, Ser. No. 234,244

Int. Cl.³ F16H *47/04, 37/06*

U.S. Cl. 74—687 **2 Claims**



1. A clutchless, direct-drive transmission comprising:

(a) input and output shafts linked through sun and planetary gears;

(b) a ring gear engaged on said planetary gears for controlling the relative rotation of said shafts;

(c) a first wobble plate pump and a liquid-filled closed line connecting the inlet and outlet of said pump said pump being operatively connected to said ring gear to concomitantly exert a variable restraining force on, and be driven by, said ring gear;

(d) externally operable control means for varying the fluid displacement per cycle of said first pump;

(e) a second wobble plate pump installed in said line to variably restrain the flow of fluid in said line to provide another control input to restraint placed on said ring gear, said second pump being driven by said output shaft to feed back output shaft speed into the ring gear restraint function;

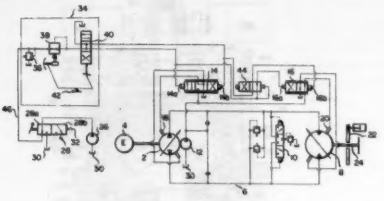
(f) said externally operable control means comprising means to change the angle of the wobble plate of said first pump, and including means to vary the angle of the wobble plate of said second pump as a function of the fluid flow producted by said first pump; comprising pressure sensor operatively connected to the output of said first pump such that increased sensed pressure directly increases the angle of said wobble plate; and,

(g) said pressure sensor comprising a cylinder with a fluid tap tube communicating with the output of said first pump and including a piston in said cylinder mechanically linked to said second wobble plate.

4,341,133
CONTROL SYSTEM FOR A HYDRAULICALLY DRIVEN VEHICLE

Masaaki Sakamoto, Kaga, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 30, 1980, Ser. No. 154,963
Claims priority, application Japan, May 31, 1979, 54-72392
Int. Cl.³ F16H *47/00*
U.S. Cl. 74—733 **3 Claims**



1. A control system for a hydraulically driven vehicle including a variable displacement hydraulic pump driven by a prime mover, and a hydraulic motor connected with said variable displacement hydraulic pump in a closed loop and driven thereby, said control system comprising in combination:

a fixed displacement first charge pump driven by said prime mover;

a pilot-operated servo valve means for controlling the displacement of said variable displacement hydraulic pump, said pilot-operated servo valve means having a pilot port formed therein and being connected with said first charge pump;

a fixed displacement second charge pump driven by said prime mover;

a manually operated change-over valve means connected at the input side thereof to said second charge pump, said change-over valve means having a communication position and an offset position said change-over valve means being normally held in the communication position, said change-over valve means being changed over to the offset position for connecting the output side of said second charge pump to a tank; and

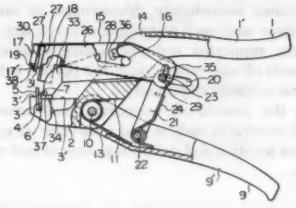
servo control valve means connected at the input side thereof with said change-over valve means and at the output side with the pilot port of said pilot-operated servo valve means, wherein when said change-over valve means is in the communication position, said servo control valve means is connected to said second charge pump through said change-over valve means.

4,341,134
TOOL FOR STRIPPING INSULATING COVERING

Shigeo Yamazaki, Suzuka, and Masahiko Nakamura, Matsuzaka, both of Japan, assignors to MCC Corporation, Tsu, Japan

Filed Aug. 8, 1980, Ser. No. 176,631
Claims priority, application Japan, Oct. 9, 1979, 54-130273; Oct. 9, 1979, 54-140084[U]; Oct. 9, 1979, 54-140085[U]; Oct. 9, 1979, 54-140086[U]; Oct. 9, 1979, 54-140087[U]; Oct. 9, 1979, 54-140088[U]; Oct. 9, 1979, 54-140089[U]
Int. Cl.³ H02G *1/12*
U.S. Cl. 81—9.5 A **9 Claims**

1. A tool for stripping the insulating covering from a covered electrical wire which comprises a main body consisting of a first handle having a lower jaw at the leading end and a second handle pivoted to said first handle by means of a shaft, a wire holding mechanism provided at the leading end portion of said main body for gripping said wire when the first and second handles are closed and cutting blade means provided at the leading end portion of said main body adjacent to said wire holding mechanism for cutting into said insulating covering and pulling the cut insulating covering off of wire core along said handles when said first and second handles are closed, said cutting blade means having an upper cutting blade and a lower cutting blade, said lower cutting blade being a stationary cutting blade secured to the upper surface of said lower jaw and

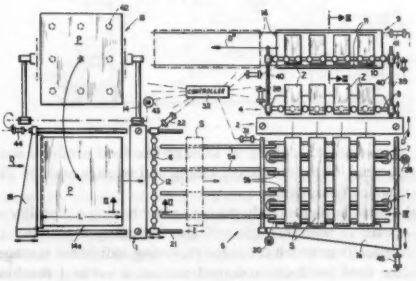


said upper cutting blade being a movable cutting blade adapted to approach the lower cutting blade and move in the longitudinal direction of the handles when the first and second handles are closed, said wire holding mechanism and cutting blade means projecting laterally of said handles.

4,341,135
METHOD OF AND APPARATUS FOR CUTTING A PLATE INTO SMALL SECTIONS

Werner Ufermann, Bernried, Fed. Rep. of Germany, and Rolf Grzymek, Marietta, Ga., assignors to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Aug. 1, 1980, Ser. No. 174,700
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931780
Int. Cl.³ B26D *3/16*; B29C *17/10*
U.S. Cl. 83—23 **8 Claims**



1. A method of subdividing a large rectangular plate into a plurality of small rectangular sections, said method comprising the steps of:

feeding said plate stepwise in a main direction through an upstream shear while supporting and pneumatically seizing the downstream end portion of said plate immediately downstream of said shear with each advance step;

shearing the supported and seized downstream end portions off said plate between the advance steps;

displacing the sheared-off, supported, and seized end portions in said main direction immediately after each is sheared off said plate to the upstream end of a conveyor and depositing them one after another on said conveyor;

displacing the sheared-off end portions with said conveyor in said main direction until each one is positioned over a respective aligner spaced apart in said main direction;

lowering said conveyor and thereby depositing the sheared-off end portions on the respective aligners;

aligning the sheared-off end portions on said aligners with said aligners perpendicular to said main direction;

pushing the aligned and sheared-off end portions jointly in a transverse direction perpendicular to said main direction stepwise through a downstream shear while supporting and pneumatically seizing the downstream ends of said end portions immediately downstream of said downstream shear with each transverse advance step;

shearing the supported and pneumatically seized downstream ends off said downstream end portion between the transverse advance steps; and

displacing the sheared-off, supported, and pneumatically seized downstream ends in said transverse direction to a collection location and depositing same in said collection location.

4,341,136

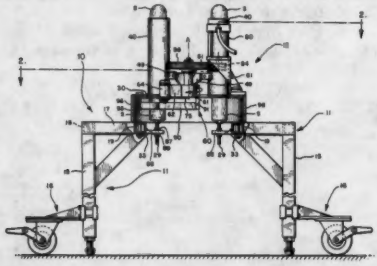
FOOD PROCESSING MACHINE

Roger F. Parson, Duluth, Minn., assignor to Jeno's, Inc., Duluth, Minn.

Filed Aug. 27, 1980, Ser. No. 181,817

Int. Cl.³ B26D *3/22*

U.S. Cl. 83—158 **2 Claims**



1. A machine for cutting up sausage-like food products such as pepperoni, Canadian bacon, salami and sausage and the like into chunks, comprising:

(a) a meat holder including a base plate having a plurality of apertures therethrough and also including a plurality of vertically oriented tubes for receiving individual sausage-like food products arranged around a vertical machine axis;

(b) said apertures including a first group of apertures over which corresponding ones of said tubes are mounted so that sausage-like food products inserted in said tubes are free to pass through said base plate;

(c) said apertures also including a central aperture disposed at said machine axis;

(d) a blade assembly rotatable about said machine axis and disposed below said plate on a drive shaft extending upwardly through said central aperture;

(e) said drive shaft being rotably supported from spider means above said plate;

(f) said spider means being mounted between said tubes;

(g) said blade assembly including a blade mounted for rotation about a vertical blade axis;

(h) said vertical blade axis being radially displaced from said machine axis; and

(i) means for rotating said blade assembly about said machine axis.

4,341,137

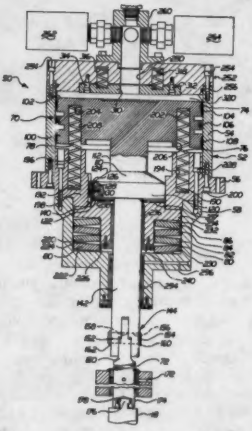
MATERIAL FORMING APPARATUS

Paul A. Leitch, Northfield, and Thomas W. Shinn, Norristown, both of Pa., assignors to The Warner & Swasey Company, Cleveland, Ohio

Filed Oct. 2, 1979, Ser. No. 81,046

Int. Cl.³ B26D *5/12;* B30B *15/20*

U.S. Cl. 83—639 **22 Claims**



1. An apparatus for use in forming material with a tool, said apparatus comprising housing means for defining a chamber, a piston adapted to be connected with the tool, said piston being axially movable within said chamber, means for introducing fluid under pressure into said chamber to cause said piston to move in said chamber through a power stroke in a first direction to thereby effect movement of the tool relative to the material, return means for moving said piston through a return stroke in a second direction to retract the tool from the workpiece, and dissipating means for dissipating kinetic energy of said piston as said piston moves through its return stroke in said second direction, said dissipating means including means for providing a relatively unrestricted flow path for conducting a flow of fluid displaced from the chamber by said piston at a first rate during a first portion of the return stroke and for providing a relatively restricted flow path for conducting a flow of fluid displaced from the chamber by said piston at a second rate which is less than the first rate during a second portion of the return stroke.

4,341,138

BAND SAW

Kurt Sidler, Ottenbach, Switzerland, assignor to Gottlieb Johner, Kerzers, Switzerland

Filed Feb. 29, 1980, Ser. No. 125,816

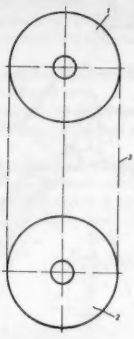
Claims priority, application Switzerland, Mar. 2, 1979, 2076/79

Int. Cl.³ B23D *55/08;* B27B *13/10*

U.S. Cl. 83—820 **2 Claims**

1. A band saw comprising a support, two cast iron wheels mounted for rotation on the support on spaced axes, one of said wheels being power driven, and a saw blade in the form of an endless saw band trained under tension around the wheels and provided with teeth, the bearing surfaces of both the wheels having a large number of grooves running parallel to one another and the rims of said wheels, the width of the grooves exceeding the depth, wherein the width and depth of at least

two grooves lying opposite each other on the one and the other wheel are equal so that zones of the saw band running



over the grooves of the first wheel are running over the grooves having the same dimensions of the second wheel.

4,341,139

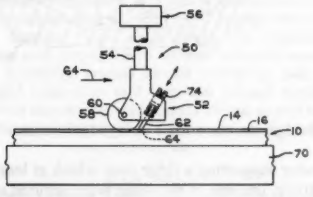
APPARATUS FOR SCORING A COATED SUBSTRATE

Robert P. DeTorre, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 153,387, May 27, 1980, Pat. No. 4,300,934. This application Jun. 5, 1981, Ser. No. 271,055

Int. Cl.³ B26D *3/08*; C03B *33/10*

U.S. Cl. 83—886 **3 Claims**



1. An apparatus for scoring a sheet of refractory material having a fluid coating thereon, comprising:

means for scoring the sheet;

means mounted in spaced relationship to said scoring means for wiping the fluid coating to define a score path; and

means for moving said scoring wheel and said wiping means along a predetermined path with said scoring means upstream of said wiping means.

4,341,140

AUTOMATIC PERFORMING APPARATUS

Hideaki Ishida, Hachioji, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

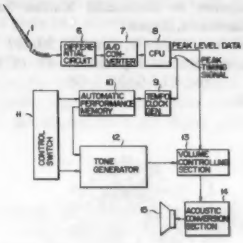
Filed Jan. 22, 1981, Ser. No. 227,537

Claims priority, application Japan, Jan. 31, 1980, 55/10504[U]; Jan. 31, 1980, 55/10505[U]; Jan. 31, 1980, 55/10516

Int. Cl.³ G10G *7/00*

U.S. Cl. 84—1.03 **5 Claims**

1. An automatic performing apparatus comprising detecting means for detecting an amount of change in a motion of a baton; clock signal generating means for generating tempo clock signals on the basis of the motion change amount of the baton detected by said detecting means; a memory for sequentially storing tone data; and tone generating means for generating a tone dependent on said tone data read out from said memory in accordance with said tempo clock signal.



4,341,141

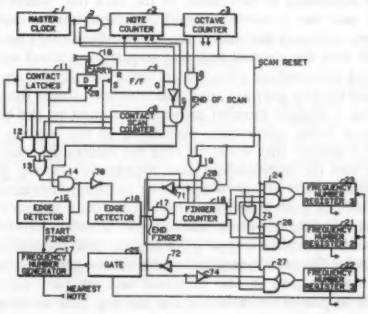
POLYPHONIC SLIDING PORTAMENTO IN A MUSICAL INSTRUMENT

Ralph Deutsch, and Leslie J. Deutsch, both of Sherman Oaks, Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Jul. 10, 1980, Ser. No. 167,305

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.24 **15 Claims**



1. In a keyboard operated electronic musical instrument in which the pitches of the generated tones are determined by frequency numbers corresponding to actuated keyboard switches, apparatus for providing polyphonic portamento in response to the lateral displacement of any of a number of player fingers in contact with said keyboard switches comprising;

a switch array comprising a multiplicity of keyswitches arranged in a linear array such that a plurality of contiguous keyswitches is actuable, for each pitch by each of said player fingers in contact with said switch array,

a scanning means for providing scanning signals to said switch array,

a detection means response to said scanning signals whereby detection signals are generated corresponding to each actuated keyswitch in said switch array,

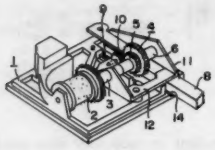
a center detection means responsive to said detection signals whereby a note signal is generated corresponding to each one of said player fingers in contact with said switch array, and

a frequency number generator responsive to each said note signal wherein said frequency numbers are generated thereby producing said polyphonic portatmento effect corresponding to said lateral motion of said player fingers in contact with said keyboard switches.

4,341,142
MUSIC BOX

Fumito Komatsu, Shiojiri, and Kenzi Muramatsu, Okaya, both of Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Shimosuwa, Japan

Filed Nov. 13, 1979, Ser. No. 93,657
Claims priority, application Japan, Nov. 17, 1978, 53-158998
Int. Cl.³ G10F 1/06
U.S. Cl. 84—95 R 7 Claims



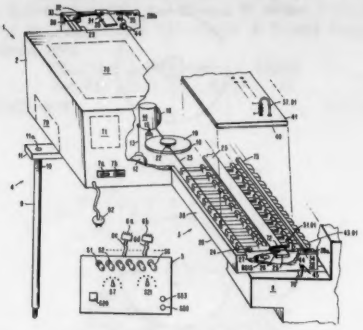
1. A rocking chair music box mechanism comprising a base for mounting on a rocking chair, a drum pivotally mounted on a base, a spring connected to the drum, a starting gear connected to the spring, whereby the spring is adapted to accumulate a turning force relative to the drum and starting gear, a rack bar slidably supported on the base, elastic means connected to the base and to the rack bar to urge the rack bar to make a return movement in one direction, an intermediate gear movably mounted on the base and operatively connected to said rack bar and engagable and disengagable with the starting gear according to movement of the rack bar, whereby when said rack bar is moved in said one direction by said elastic means, said rack bar moves the intermediate gear into engagement with the starting gear and imparts rotational movement to said intermediate gear, which imparts rotational movement to said starting gear to thereby accumulate turning force in said spring, a stopper member movably mounted on the base, said stopper being operatively connected to the starting gear in such a manner that when the rack bar rotates the intermediate gear and the intermediate gear rotates the starting gear, the stopper is moved out of operative stopping connection with the starting gear, and whereby when the starting gear is turned in an opposite direction said stopper member moves on the base into operative stopping connection with the starting gear, whereby the rack means and intermediate gear tend to rotate the starting gear in one direction and whereby the stopper tends to prevent rotation of the starting gear in an opposite direction.

4,341,143
REMOTE-CONTROLLED KEY-DEPRESSING DEVICE

Russell C. Minerd, P.O. Box 554, Scarsdale, N.Y. 10583

Filed Jun. 20, 1980, Ser. No. 161,300
Int. Cl.³ G10F 3/00
U.S. Cl. 84—107 4 Claims

1. A remote-controlled device for depressing the keys of a keyboard instrument which comprises in the device (a) separate means for depressing each of the desired keys, each of said means being pivotally mounted on a fulcrum, (b) electromagnetic means for selecting each means for depressing desired keys which comprises (i) an electromagnet and (ii) a pusher, which is capable of being magnetically attracted to said electromagnet when manually selectable switching means in the device applies current to the electromagnet thereby selected, which corresponds to the desired key of the instrument, (c) an activator means normally spring-urged toward the separate means for depressing each of the desired keys, and (d) means whereby the activator may be moved in opposition to its spring; so that in operation the activator is moved in opposition to its spring, current is applied to said electromagnet selected, causing the corresponding pusher to be attracted to the electromagnet and in line between the activator and the means for depressing the desired keys and then allowing the spring to urge the activator, causing the activator to move the pusher against the means for depressing the desired key, thereby

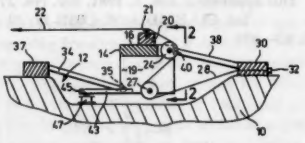


causing the means for depressing the desired key to rotate on the fulcrum and depress the desired key.

4,341,144
BRIDGE STRUCTURE FOR STRINGED INSTRUMENTS

Paul A. Milne, 785 Exmouth St., Sarnia, Ontario, Canada

Filed Jan. 29, 1981, Ser. No. 229,307
Int. Cl.³ G10D 3/04
U.S. Cl. 84—307 4 Claims



1. A bridge structure for a stringed instrument body, comprising:

a member supporting a ridge over which at least one string is strung, one end of the string being secured at a location on the instrument remote from the said member,

a first and a second guide pulley secured to the member, the other end of the string being entrained around both pulleys in an S-configuration, the terminal part of said other end of the string being secured to the instrument body, the S-configuration cooperating with tension in the string to give rise to rotational torque on the member,

suspension means for supporting the member from the instrument body in such a way as to counteract said rotational torque,

and means on the member supporting at least part of a pick-up device, whereby oscillation of the string tension tends to produce rotational oscillation in the member and a corresponding signal in said device.

4,341,145
ELECTRONIC PIPE VALVE

Richard H. Peterson, 11748 Walnut Ridge Dr., Palos Park, Ill. 60464

Filed Sep. 23, 1980, Ser. No. 190,001
Int. Cl.³ G10D 9/04
U.S. Cl. 84—337 4 Claims

1. An electronic pipe valve assembly for pipe organs, comprising:

a mounting bracket adapted to secure the assembly within the wind chest of a pipe organ;

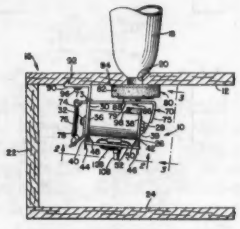
solenoid means mounted on said bracket, said solenoid means including a coil having first and second terminals;

first and second spaced terminal lug means secured to and located at opposite ends of said solenoid means and electrically connected to said first and second terminals of said coil, respectively;

armature means adapted for movement by the energization and deenergization of said coil;

pipe valve means mounted on said armature for controlling the flow of air from the wind chest to the pipes of a pipe organ;

control means for said solenoid means, said control means including an electronic control circuit mounted on a circuit board approximately equal in area to the planar projection of said coil, whereby said circuit board is easily



accessible without impeding access to said coil, said armature, or said pipe valve means, said control means further including a control lead connected to said control circuit for supplying control signals to regulate the energization and deenergization of said coil and power leads connected to said control circuit for supplying power to energize said coil; and

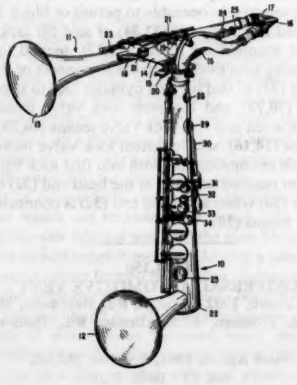
connector means including first and second notches on said circuit board adapted to receive and engage said first and second terminal lugs, respectively, for mechanically mounting said circuit board on said solenoid means and further including printed circuit means on said circuit board and located at said first and second notches for electrically connecting said control circuit to said first and second terminal lug means.

4,341,146

COMBINED TENOR AND SOPRANO SAXOPHONE

Louis B. Massa, Bergenfield, N.J.

Filed Feb. 5, 1981, Ser. No. 231,682
Int. Cl.³ G10D *15/00*
U.S. Cl. 84—381 **8 Claims**



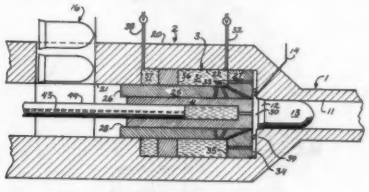
1. A musical instrument comprising a tenor saxophone and a soprano saxophone slideably connected together by a plate wherein a bracket connects the neck of the soprano saxophone to said plate and a rail connects the neck of the tenor saxophone to said plate and wherein nuts extend through said plate and said rail and are slideably mounted therein whereby when said nuts are loosened and therefore slideable in said rail one saxophone can be slid relative to the other saxophone until they are properly aligned wherein said tenor saxophone and said soprano saxophone each are fitted with a trumpet bell outlet.

4,341,147

COAXIAL DUAL HOLLOW PISTON REGENERATIVE LIQUID PROPELLANT GUN

Robert E. Mayer, Williamstown, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 16, 1980, Ser. No. 158,939
Int. Cl.³ F41F *1/04*
U.S. Cl. 89—7 **32 Claims**



5. An improved breech structure for a direct injection regenerative liquid propellant gun comprising:

a. a coaxial piston structure including an outer piston and an inner piston assembly mounted coaxially in a breech casing having a barrel end and a breech end wherein:

(1) said outer piston is movable axially with respect to said casing, defines a variable volume combustion chamber in cooperation with the barrel end of said casing, defines a variable volume primary reservoir in cooperation with the breech end of said casing and constitutes a differential area piston between said chamber and said primary reservoir having its larger piston area exposed to said combustion chamber,

(2) said outer piston has an axial bore and injection ducts for flow of liquid propellant from said primary reservoir into said bore for feeding propellant from said primary reservoir to said combustion chamber,

(3) said inner piston assembly is journaled in said bore to permit relative axial displacement between said piston and said piston assembly to control said flow and the rate of said flow of propellant from said injection ducts to said combustion chamber, and

(4) said inner piston assembly has a forward piston portion exposed to said combustion chamber;

b. means for supplying a quantity of liquid propellant to said primary reservoir;

c. means for initiating combustion in said combustion chamber;

whereby initiation of combustion with said piston structure in firing position and with propellant in said reservoir will cause liquid propellant to be driven from said reservoir through said injection ducts in response to combustion pressure on said piston structure; and

whereby the rate of increase of pressure, the pressure attained and the duration of pressure in said combustion chamber are in part functions of the quantity and rate of flow of propellant through said injection ducts which in turn in a function of the capacity of said reservoir, the size and location of said ducts, relative movement of components of said piston structure, the rate of expansion of

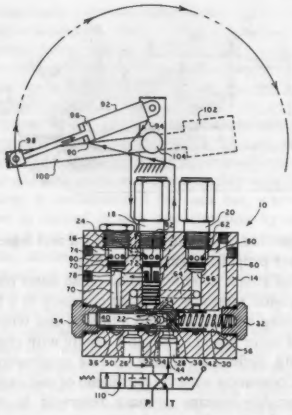
volume of said combustion chamber and the pressure in the combustion chamber.

4,341,148

HYDRAULIC SEQUENCING VALVE

Constantine Kosarzecki, Schaumburg, Ill., assignor to Modular Controls Corporation, Villa Park, Ill.

Filed Sep. 30, 1980, Ser. No. 192,642
Int. Cl.[3] F15B *11/15;* A01B *3/30*
U.S. Cl. 91—356 20 Claims



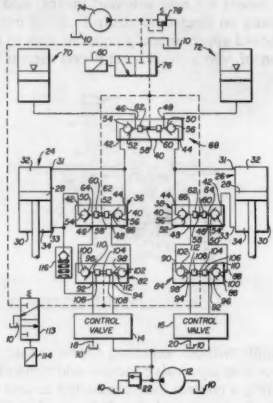
1. An improved hydraulic sequencing valve comprising: a valve body defining first and second line ports, a pump port, a tank port, and an internal bore; a valve spool within said internal bore including a partition intermediate its ends dividing said spool into first and second chambers and having an orifice providing fluid communication between said chambers, said spool being movable within said internal bore between first and second positions and defining with said valve body first fluid flow paths from said pump port to said first line port and from said second line port to said tank port when in said first position, and second fluid flow paths from said pump port to said second line port and from said first line port to said tank port when in said second position, said spool first chamber being in continuous fluid communication with said pump port; sequence control valve means disposed in fluid communication between said spool second chamber and said tank port and arranged to open when the fluid pressure within said spool second chamber transmitted thereto through said spool orifice reaches a predetermined pressure for providing a restricted fluid path from said second chamber to said tank port for creating a pressure differential between said chambers and causing initial movement of said spool from said first position toward said second position; and aperture means in said spool second chamber defining with said valve body a direct fluid flow path from said second chamber to said tank port upon said initial movement of said spool toward said second position for increasing the pressure differential between said chambers and accelerating the movement of said spool to said second position.

4,341,149

SELECTIVELY ACTUATABLE FLUID CONTROL SYSTEM FOR A WORK ELEMENT

Joseph E. Dezelan, Western Springs, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00667, § 371 Date Aug. 30, 1979, § 102(e) Date Aug. 30, 1979, PCT Pub. No. WO81/00598, PCT Pub. Date Mar. 5, 1981
PCT Filed Aug. 30, 1979, Ser. No. 95,191
Int. Cl.[3] F15B *11/16*
U.S. Cl. 91—526 6 Claims



1. A hydraulic system for controlling the work element of an earth working machine comprising hydraulic motor means (24,26) for moving said work element, said hydraulic motor means (24,26) including at least one lift jack (24) connected to move said work element, said lift jack (24) including a lift jack cylinder (30) and a piston (28) mounted for movement within said lift jack cylinder (30) which divides said lift jack cylinder (30) into a head end (32) and a rod end (34), fluid source means (10,12) for providing fluid to said hydraulic motor means (24,26), control means (14,16) connected to said fluid source means (10,12) for alternately directing a flow of fluid into and out of said head and rod ends (32,34) of said lift jack cylinder (30), shock absorbing means (70,72), including fluid accumulator means (70,72), and a lock valve system (36, 38, 68, 82,84) connected between said control means (14,16), said hydraulic motor means (24,26) and said shock absorbing means (70,72), said lock valve system (36,38,68,82,84) including first lock valve means (36,38) connected to said head and rod ends (32,34) of said lift jack cylinder (30), said first lock valve means (36,38) being selectively operable to permit or block fluid flow from said head and rod ends (32,34) of said lift jack cylinder (30) and said accumulator means (70,72), second lock valve means (68) being selectively operable to connect or disconnect said head end (32) of said lift jack cylinder (30) to said accumulator means (70,72), and longstem lock valve means (82,84) connected between said first lock valve means (36,38) and said control means (14,16), said longstem lock valve means (82,84) being operable in combination with said first lock valve means (36,38) to vent residual pressure at the head end (32) of said lift jack cylinder (30) when said head end (32) is connected to said accumulator means (70).

4,341,150

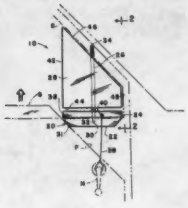
UNIVERSAL AUTOMOTIVE VENT

Alan S. McConnell, 1902 Haverhill Rd., Baltimore, Md. 21234; Thomas R. Bilodeau, 6220 Allender Rd., Baltimore, Md. 21162

Filed Apr. 6, 1981, Ser. No. 251,111
Int. Cl.[3] B60J *1/20*
U.S. Cl. 98—2.12 16 Claims

1. In a vent wing for attachment to the lower front corner of

a motor vehicle front-door window of the type having no vent wing, and a rearwardly sloping front edge and a horizontal lower edge each with a glass channel therein permitting the door window-glass with matching sloping front edge, to be raised and lowered thereon under control of a window mechanism, the improvement comprising: a body including a fin



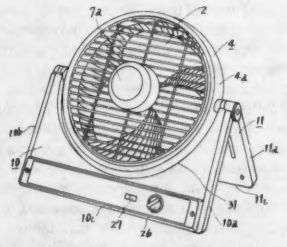
proportioned for fitting downwardly into a said horizontal glass channel and a stop on a top portion of the fin, an axle supported upright of the body and having an upper end proportioned for fitting upwardly into a said rearwardly sloping front edge glass channel and a wing affixed on said axle below said axle upper portion.

4,341,151

ELECTRIC FAN

Kunji Sakamoto, Hirakata, Japan, assignor to Matsushita Seiko Co., Ltd., Osaka, Japan

Filed Jul. 1, 1980, Ser. No. 164,954
Claims priority, application Japan, Dec. 11, 1979, 54-161096
Int. Cl.³ F24F *7/00*
U.S. Cl. 98—94 R **8 Claims**



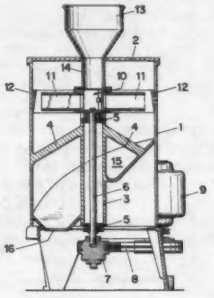
1. An electric fan comprising:
vanes for sending air axially thereof;
a motor for retaining and turning the vanes;
an annular main body supporting the motor and forming a passage for air flow delivered by the vanes;
a pair of pivots provided on the main body, said pivots being arranged on a phantom straight line substantially perpendicular to the rotary axis of the vanes and symmetrical with respect to the rotary axis; and,
a pair of substantially rectangular plate-like support members which are rotatably connected with each other in side-by-side relation and with the main body by the pivots, each of said support members having a substantially semicircular cutout formed on a radius slightly larger than that of the outer periphery of the main body to allow rotation of the main body and the support members on the pivots, each of said support members being provided with a primary support portion comprising at least two support points on a line parallel with said phantom straight line and with a secondary support portion comprising at least one support point on a line which passes through one end of the axis of the pivots and is substantially perpendicular to said phantom straight line.

4,341,152

CONTRIVANCE FOR SHELLING A GRANULAR PRODUCT

Karl Solenthaler, Teufen, Switzerland, assignor to Gebrueder Buehler AG, Switzerland

Continuation of Ser. No. 69,902, Aug. 27, 1979, abandoned. This application Nov. 7, 1980, Ser. No. 204,825
Claims priority, application Switzerland, Mar. 8, 1979, 2244/79
Int. Cl.³ B02B *3/00, 7/02*
U.S. Cl. 99—609 **7 Claims**



1. Apparatus for shelling a granular product of given grain size, such as soy beans, sunflower seeds and the like, comprising:
(a) a housing having a distribution head mounted therein for rotation about its longitudinal axis;
(b) said distribution head having a peripheral wall with at least one pass through opening therein to which is connected a radially oriented unenclosed guideway extending radially beyond said passthrough opening, said guideway having a generally U-shaped profile whose side walls point in the direction of rotation, said guideway having one generally flat guide surface extending between said side walls and facing in the direction of rotation;
(c) said opening being structured as a slot, said slot defining a wall generally coplanar with the guide surface of the guideway, said slot extending longitudinally in the direction of the axis of rotation of said distribution head with the height of said opening in said longitudinal direction being at least three times its width, said width being preferably 1.5 to 3 times the grain width; and
(d) means for rotating said head and said guideway at a speed such that product in said distribution head is carried out through said opening by centrifugal force and moves in a two dimensional distribution with the width of one layer along the guideway and retained on the flat surface so as to be thrown outwardly against said housing.

4,341,153

SPLICING AND TRUSS ASSEMBLY APPARATUS AND METHODS

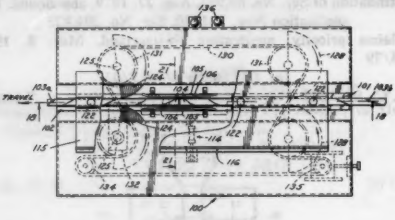
Donald M. Bowser, Barrie, Canada, assignor to Truswal Systems Corp., Madison Heights, Mich.

Filed Oct. 16, 1980, Ser. No. 197,543
The portion of the term of this patent subsequent to Sep. 8, 1998, has been disclaimed.
Int. Cl.³ B30B *3/04*
U.S. Cl. 100—35 **31 Claims**

1. Assembly apparatus for securing toothed connector plates to sides of wood members such as 2×4s comprising vertical axis longitudinally fixed side roller means for progressively

pressing said connector plates with teeth placed against said wood members ahead of said roller means into wood penetrating assembled relation as they pass said roller means, and means for driving said wood members in required relation together with said connector plates past said side roller means.

22. A production method for assembling wood members connected by stamped sheet metal elements having toothed extremities fixedly penetrating said wood members comprising



the steps of prepositioning said wood members in assembly relation, positioning said elements on respective horizontally spaced sides of said wood members in required relation to each other, driving and guiding said wood members along a horizontal path, and applying synchronized compressive rolling pressure adjusted to the width of said wood members to progressively force said tooth extremities into penetrating assembled relation along the length of said wood members.

4,341,154

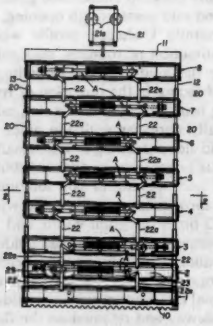
CAGE FOR COMPRESSING FOOD ARTICLES

Gerald J. Orlowski, Scottsdale, Ariz., and Thomas E. Dugle, Cincinnati, Ohio, assignors to Armour and Company, Phoenix, Ariz.

Continuation of Ser. No. 963,909, Nov. 24, 1978. This application Oct. 6, 1980, Ser. No. 194,673

Int. Cl.³ B30B *7/02*

U.S. Cl. 100—194 **8 Claims**



1. A cage for compressing food articles comprising a series of vertically spaced trays which includes a lower tray having food articles thereon, a middle tray having food articles thereon, and an upper tray over the food articles on said middle tray, the weight of said middle tray and articles thereon bearing against the articles on said lower tray, means between said upper tray and said middle tray for moving said upper tray and said middle tray toward each other for developing pressure on said articles on said middle tray, and means between said middle tray and said lower tray for moving said middle tray and said lower tray toward each other and developing pressure on said articles on said lower tray, said first mentioned means being effective for developing a pressure on said articles on said middle tray which is greater than the pressure developed by said second mentioned moving means on said articles on said lower tray to bring the total pressure on the articles on each of said trays closer to equality.

4,341,155

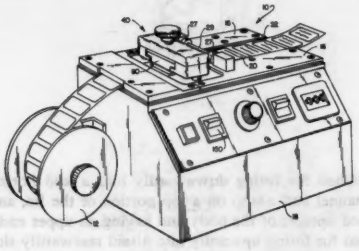
CUSTOM LABEL PRINTER

Kenneth D. Relyea, Grove City, and Dale A. Beard, Dayton, both of Ohio, assignors to Drustar, Inc., Grove City, Ohio

Filed Oct. 3, 1980, Ser. No. 193,620

Int. Cl.³ B41L *27/26*; B65H *23/22*

U.S. Cl. 101—125 **3 Claims**



1. An improved apparatus for printing information on each of a plurality of interconnected labels, said labels having a region of substantially different light reflection or transmission characteristics associated with each label, said apparatus of the type having: a label advance means including a controllable drive means having an advance control input for at times advancing said interconnected labels along a label path including a printing station and at times stopping said advance with a label positioned at said printing station in response to the state of the control input; a printing means at said printing station and having a print control input for printing said information at a label positioned at said printing station in response to the state of the print control input; a photo radiator and detector means mounted adjacent said label path for registration with said regions; and control circuit means connected to said photo radiator and detector means, said advance control input and said print control input for stopping the advance of said labels and initiating the operation of said printing means in response to registration of one of said regions with the light path of said photo means, wherein the improvement comprises:

a negative feedback control circuit connected to said photo radiator and detector means for maintaining a constant light intensity received by said photo detector when said labels are interposed in the light path from said photo radiator to said photo detector, said feedback control circuit comprising:

(a) a peak detector connected to the output of said photo detector for providing a signal level proportional to the average minimum light received by said photo detector;

(b) an amplifier having its input connected to the output of said peak detector and its output connected to said photo radiator; and

(c) a reference level control for adjusting the radiation from said photo cell radiator to a selected level.

4,341,156

DILITHO PRINTING IMAGE HEATING

Werner M. Kaeppner, Prescott, Canada, assignor to CIP Inc., Quebec, Canada

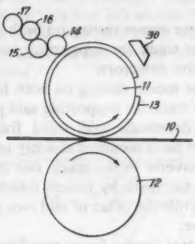
Filed Aug. 28, 1980, Ser. No. 182,168

Int. Cl.³ B41M *1/06*; B41L *25/00*; B41F *7/00*

U.S. Cl. 101—141 **5 Claims**

1. In a DiLitho printing press wherein hydrophobic ink is provided to hydrophobic image areas on a printing plate and an aqueous fountain solution is provided to hydrophilic non-

image areas on said printing plate, and wherein said image areas are dark and absorptive of radiation and said non-image areas are light and reflective of radiation, the improvement comprising providing radiant heating source means to said plate cylinder, at a point prior to application of said ink and



said fountain solution and after transfer of ink supplied in a previous cycle from said image areas to a web on which it is desired to transfer said ink, to warm selectively said image areas, said radiant heating source means being such as to warm said image areas to from 10° F. to 50° F. above the ambient temperature prior to inking.

4,341,157

VIBRATION-ABSORBING CYLINDER FOR PRINTING PRESSES

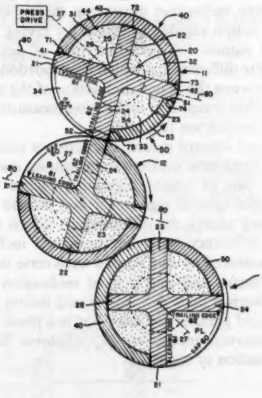
Claus Simeth, Offenbach am Main, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 27, 1981, Ser. No. 248,311

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012060

Int. Cl.³ B41F *13/08*

U.S. Cl. 101—375 **10 Claims**



1. A vibration-absorbing cylinder for a printing press intended for phased rolling engagement with a companion cylinder comprising, in combination, a unitary cylinder body of star-shaped cross section extending the length of the cylinder, the body having a central axial portion and a plurality of angularly spaced axial webs extending radially outward therefrom to define between them recesses of sector-shaped cross section longitudinally of the cylinder, a plurality of arcuate shell segments which together form the cylinder surface, the shell segments having parallel edges and extending bridgingly between the tip portions of the associated webs for enclosing all but one of the recesses, the one recess being uncovered to produce a gap in the cylinder surface, the gap defining a leading edge as the cylinder rotates, the web at the leading edge position being extended outwardly to the locus of the cylinder surface so that the cylinder body absorbs the impact with the companion cylinder which occurs at the leading edge at each revolution by reason of the gap, the edges of the segments being in abutting relation to the tip portions of the webs, a resilient vibration-dampening layer of adhesive interposed at the abutting surfaces, the webs being so arranged and of such thickness that maximum resistance of the body to bending stress is in the plane of the web at the leading edge position.

4,341,158

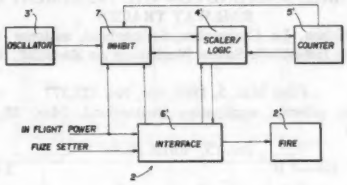
APPARATUS FOR ELIMINATING POWER SOURCE RISE TIME EFFECTS IN A TIME FUZE SYSTEM

Alan C. Reiter, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 15, 1980, Ser. No. 169,004

Int. Cl.³ F42C *11/06*

U.S. Cl. 102—215 **3 Claims**



1. An apparatus for eliminating variable power source rise time effects in a fuze timing system for providing a fuze trigger signal comprising:

a programmable timing means comprising a counter powered by said power source;

means for programming said timing means, including an oscillator or clock, with a setting time;

means for reading said setting time out of said timing means, said means for reading out also includes said oscillator and wherein said oscillator is run at different frequencies during programming and during reading out;

means for providing said fuze trigger signal upon completion of said setting time; means for reducing said setting time beneath the time in which it is desired for said fuze trigger signal to be provided by a fixed amount of time which is greater than the longest expectable rise time of said power source;

means for delaying the reading out of said setting time by said fixed amount of time, whereby said fuze trigger signal is provided at a time which is independent of power source rise time variations; and

wherein said means for reducing and said means for delaying both include an inhibit means which is connected between said oscillator and said counter.

4,341,159

RETARD SENSING DOUBLE RELEASE SAFE SEPARATION MUNITION TIMER

Robert E. Edminster, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jul. 17, 1980, Ser. No. 169,545

Int. Cl.³ F42C *15/12*

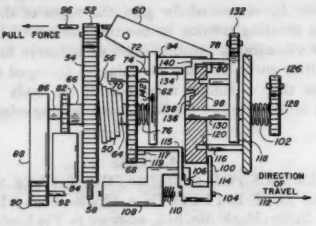
U.S. Cl. 102—228 **5 Claims**

3. A dual purpose safing and arming timer for a retard/non-retard munition comprising in combination:

means for sensing one of the retard and non-retard modes of the munition, said means for sensing further comprising:

means for double sensing said retard mode, said double

sensing means requiring a first sensing at a first time and a second sensing at a time subsequent to said first time; means for responding to said sensing of the retard mode to provide a first selected arm time; and



means for responding to said sensing of the non-retard mode to provide a second selected arm time.

4,341,160

MOBILE MACHINE FOR THE TREATMENT OF RAILWAY TRACKS

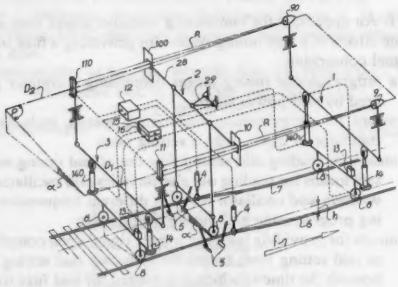
Arne Nielsen, La Conversion, Switzerland, assignor to SIG Societe Industrielle Suisse, Neuhausen am Rheinfall, Switzerland

Filed Mar. 5, 1980, Ser. No. 127,377

Claims priority, application Switzerland, Mar. 23, 1979, 2725/79

Int. Cl.³ E01B *29/04*

U.S. Cl. 104—7 B **3 Claims**



1. A mobile machine for the treatment of railway tracks equipped with a device for the longitudinal and transverse leveling of the track comprising tools for the lifting of each line of rails, tools for distributing the ballast below the raised ties, and a device for measuring and controlling the extent of the lifting comprising:

(a) a pair of first vertical position detectors respectively located headway of the machine above each line of rails of the untreated track;

(b) a pair of second vertical position detectors respectively located above each line of rails in the area of lift of the track, at an invariable distance from the line of rails;

(c) a pair of third vertical position detectors respectively located at the rear of the machine above each line of rails of the treated track;

(d) liaison means (R) respectively joining the first detector to the third detector in each of said pairs of first and third detectors to define two reference lines;

(e) sensitive means respectively arranged on the detectors of one of said pairs of first, second and third vertical position detectors to give off signals representing differences in the respective vertical positions of each said second detectors with respect to said reference lines;

(f) a first frame means resting on both lines of rails transversely to the track for supporting said pair of first vertical position detectors, said first frame means being formed of two parts mounted slidably one on the other in the plane transverse to the track, one of said parts being connected to the track by rollers which rest on the two lines of rails while the other of said two parts is connected to the machine;

(g) a second frame means resting on both lines of rails transversely to the track for supporting said pair of second vertical position detectors;

(h) a third frame means resting on both lines of rails transversely to the track for supporting said pair of third vertical position detectors, said third frame means being formed of two parts mounted slidably one on the other in the plane transverse to the track, one of said parts being connected to the track by rollers which rest on the two lines of rails while the other of said two parts is connected to the machine;

(i) a height control means for controlling the vertical displacements of said lifting tools in response to said vertical position difference signals;

(j) a first means for measuring the transverse inclination of the track and give off signals representing the differences in inclination thereof with respect to the horizontal, said first measuring means supported by said first frame means;

(k) a second means for measuring the transverse inclination of the track and give off signals representing the differences in inclination thereof with respect to the horizontal, said second measuring means supported by said third frame means;

(l) a first pair of height regulating means arranged on said first frame means for respectively regulating the height of the detectors of said pair of first vertical position detectors;

(m) a second pair of height regulating means arranged on said third frame means for respectively regulating the height of the detectors of said pair of third vertical position detectors;

(n) a first control means respectively connected to said first transverse inclination measuring means and to said first pair of height regulating means for giving off differential control signals for said first pair of height regulating means the difference of which is proportional to the difference between the actual inclination of the track measured by said first transverse inclination measuring means and a desired inclination (α); and

(o) a second control means respectively connected to said second transverse inclination measuring means and to said second pair of height regulating means for giving off differential control signals for said second pair of height regulating means, the difference of which is proportional to the difference between the actual inclination of the track measured by said second transverse inclination measuring means and said desired inclination (α), whereby said reference lines defined by said liaison means (R) are maintained parallel and inscribed in a plane (P) having the said transverse inclination (α) whatever the geometrical conformation of the track.

4,341,161

WORKPIECE HANGER CARRIAGE

Toshikatsu Morita, Sayama, and Akira Minegishi, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1980, Ser. No. 147,745

Int. Cl.³ B65G *17/32*

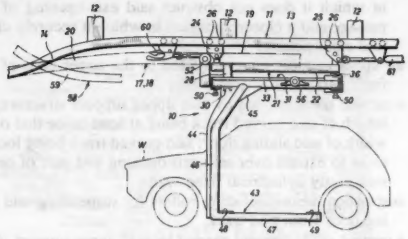
U.S. Cl. 105—149 **10 Claims**

5. A workpiece conveyor system, comprising:

(a) a first rail having a vertically lowered portion;

(b) a pair of second rails each having a portion vertically curved toward said vertically lowered portion of said first rail;

(c) a pair of third rails each having a vertically raised portion adjacent to said vertically lowered portion;
(d) a first frame having rollers rollingly engaging said first rail;
(e) a second frame pivotally mounted on said first frame and having a pair of rollers rollingly engaging said second rails, respectively, said first and second frames being angularly movable relative to each other when moving along said vertically lowered and curved portions of said first and second rails;



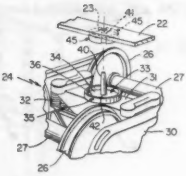
(f) a pair of substantially L-shaped arms pivotally mounted on said second frame and laterally spaced from each other for supporting a workpiece therebetween; and
(g) a pair of rollers rotatably mounted on said arms, respectively, and rollingly engaging said third rails, respectively, said L-shaped arms being angularly movable away from each other for releasing said workpiece when said rollers on the arms move along said vertically raised portions of said third rails.

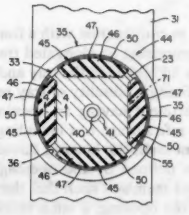
4,341,162

RAILWAY CENTER PLATE LINER

Julien C. Mathieu, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Aug. 18, 1980, Ser. No. 179,192
Int. Cl.³ B61F *5/16*; F16C *17/10*
U.S. Cl. 105—199 C **20 Claims**





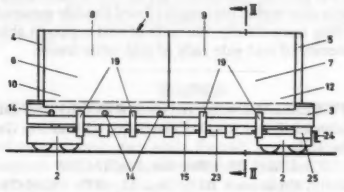
1. In a railway vehicle having; a body provided with a body bolster and a body center plate; a truck provided with a truck bolster and bolster bowl defined by a truck center plate having an upstanding peripheral annular flange; said body center plate being received within said flange and being supported by said truck center plate and flange; and a wear resistant liner means disposed between said body center plate and said peripheral flange; the improvement wherein said liner means comprises a deformable polymeric laminate, said laminate comprising a first deformable polymeric material which is adapted to reduce load concentration against said flange and a second deformable polymeric material which provides an antifriction surface engaging said flange, said first material being an inner part of said liner means and said second material being an outer part of said liner means and a different material than said first material, said laminate resulting in an increased operating life for said flange because said laminate is adapted to deform into the contour of said flange.

4,341,163

VEHICLE SUPERSTRUCTURE IN PARTICULAR FOR RAILWAY VEHICLES WITH HOODS WHICH CAN BE EXPANDED OUTWARDS AND MOVED WITH RESPECT TO THE LOAD BEARING PLATFORM

Antal Ritzl, Bergdietikon, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Feb. 1, 1980, Ser. No. 117,486
Int. Cl.³ B61D *39/00*
U.S. Cl. 105—377 **19 Claims**



1. A railway car comprising a railway undercarriage, a load bearing platform mounted on said undercarriage, first and second end walls mounted on the ends of said load bearing platform, at least one rail provided on either end of said load bearing platform and extending substantially the entire length of said load bearing platform from said first end wall to said second end wall, at least two hoods movably mounted with respect to said first and second end walls on said load bearing platform, said at least two hoods having side walls and a roof, said side wall of said at least two hoods being provided with roller means on said side walls adapted to rollingly mate with said at least one rail provided on either side of said load bearing platform and displacement means provided on said load bearing platform for selectively displacing outwardly said side walls of at least one of said at least two hoods away from said load bearing platform so as to enable said at least one hood having said displaced side walls to slide over the other of said at least two hoods.

4,341,164

FOLDING CAMP TABLE

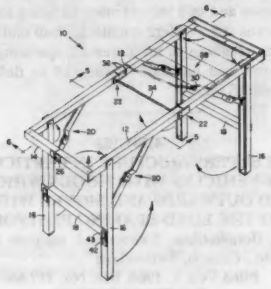
Johnny L. Johnson, San Antonio, Tex., assignor to Charles H. Ruble, San Antonio, Tex.

Filed Jun. 13, 1980, Ser. No. 159,395
Int. Cl.³ A47B *1/06, 3/04*
U.S. Cl. 108—67 **11 Claims**

1. A folding camp table comprising a foldable frame and a foldable table surface, said frame comprising:
a pair of foldable spaced apart side rails;
a pair of foldable spaced apart end rails, said end rails being perpendicular to and pivotally connected to said side rails to form a rectangle;
legs located normal to each corner of said rectangle, said legs pivotally connected to said side rails, said end rails, side rails and legs having a U-shaped configuration and said end rails and said legs capable of being folded over said side rails to obtain maximum compactibility of said

foldable frame and minimal occupation of space by said foldable frame when in the folded state;

foldable locking support means having one end attached to said leg and the opposite end attached to said side rail; and



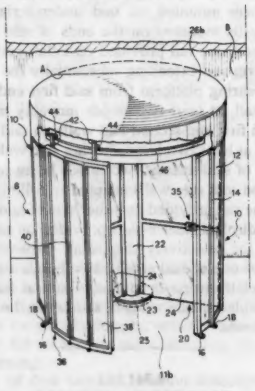
said table surface comprising a flexible material having a series of supports located on the underneath side, said supports distributed the length of said flexible material and extending transversely, the ends of said supports abutting the interior of said side rails of said table frame.

4,341,165

SECURITY SYSTEM INCLUDING A REVOLVING DOOR

Rosario Calandritti, and Biagio Calandritti, both of Via Gorizia 92, Turin, Italy

Filed May 29, 1980, Ser. No. 154,565
Claims priority, application Italy, Jun. 11, 1979, 68249/79
Int. Cl.³ E05G *3/00*
U.S. Cl. 109—8 **6 Claims**



1. In a security system for controlling access to a protected region through an opening, of the type comprising:

two opposite fixed walls of bullet-proof material, both in the form of partly cylindrical panels having a width such as to subtend an angle substantially in the region of 90°, said fixed walls being disposed on either side of said opening in such a way as to define between them a passage having an entrance opening facing outwardly of said protected region and an exit opening facing into said protected region,

a revolving door turnable only in a single predetermined rotational sense about a vertical axis, said revolving door being located at the centre of said passage, said revolving door comprising four panels of bullet-proof material, angularly spaced from one another by 90°, and

means for stopping the rotation of said revolving door with said door in a pre-established angular position and for locking it in this position whereby when said stopping and locking means are energised a person attempting to pass through said passage is trapped in a space between two adjacent panels of said revolving door and one of said two partly cylindrical walls,

the improvement wherein:

there are further provided auxiliary closure means, including a partly cylindrical panel of bullet-proof material, having a width at least as great as that of said exit opening, said panel of said auxiliary closure means being in the form of a sliding door angularly displaceable about said axis of rotation of said revolving door between an open position in which it does not obstruct said exit opening of said passage and a closure position in which it securely closes said exit opening,

an upper support structure fixed to the upper ends of said fixed partly cylindrical walls;

a curved track carried by said upper support structure, the length of said curved track being at least twice that of the width of said sliding door, said curved track being located so as to extend over said exit opening and part of one of said partly cylindrical fixed walls;

suspension means including rollers for suspending said sliding door from said track,

a curved guide element carried by said upper support structure,

a closed loop of chain guided by said curved guide element,

means attaching an intermediate point of said closed loop of chain to said sliding door, and

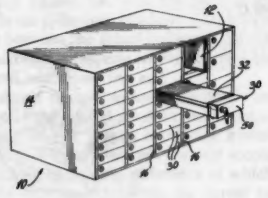
a motor unit carried in said upper support structure for driving said closed loop of chain and consequently said sliding door.

4,341,166

SAFE STORAGE BOX

Ross H. Cantley, 577 Essex Rd., Beaconsfield, Quebec, Canada

Filed Aug. 25, 1980, Ser. No. 181,213
Int. Cl.³ E05G *1/08*; A47B *88/04*
U.S. Cl. 109—53 **4 Claims**



1. A safe storage box in combination with a frame for receiving the box, the box comprising an elongated tray defining an open top, a front wall, a lid hinged to the tray and covering the open top, the frame defining a plurality of tray receiving compartments, each compartment having an opening defined by marginal members, the safe storage box including a lock housing attached to the front wall, the housing having dimensions and a peripheral shape defined by the opening and at least partially by the marginal members such that the lock housing will just slide through the opening, a latch receiving seat defined by at least one of the marginal members, a lock operated latch provided in the housing and adapted to protrude into the latch receiving seat when the box is locked in the frame, and the lock housing being made of a sturdy metal formed in at least a channel-shaped elongated member having open ends and a pair of parallel legs with its longitudinal axis perpendicular to the longitudinal axis of the tray, extensions of the tray closing the open ends of the elongated member, one of the legs of the channel forming the front wall of the lock housing and

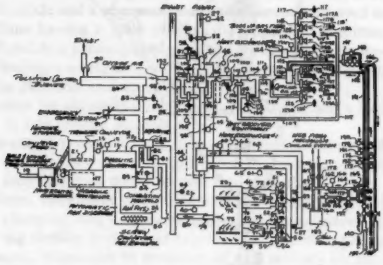
the other leg forming the attachment panel to the front wall of the tray, and the extensions of the tray forming the ends of the lock housing enclosing the lock housing.

4,341,167

ENERGY CONSERVING HEATING AND COOLING SYSTEM FOR PRINTING PLANT

Eric P. St. John, 778 Chenango St., Binghamton, N.Y. 13901

Filed Oct. 29, 1980, Ser. No. 201,984
Int. Cl.³ B09B *3/00*
U.S. Cl. 110—235 12 Claims



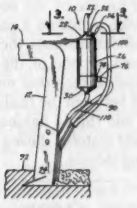
1. A heating system for a manufacturing plant comprising an incinerator for incinerating waste products generated as a result of the operations of the plant, exhaust duct means for conducting heated gases from said incinerator, a heat treating apparatus, heat exchange means for transferring heat from said heated gases in said exhaust duct means to air to be supplied to said heat treating apparatus, first duct means for conducting heated air from said heat exchange means to said heat treating apparatus, and second duct means for conducting solvent-laden air from said heat treating apparatus to said incinerator to burn off solvents in said solvent-laden air.

4,341,168

SYSTEM FOR APPLYING AMMONIA TO THE GROUND

Louie P. Siebert, Box 654, Henderson, Nebr. 68371

Continuation-in-part of Ser. No. 91,363, Nov. 5, 1979, which is a continuation of Ser. No. 787,947, Apr. 15, 1977, Pat. No. 4,196,677. This application May 11, 1981, Ser. No. 262,348
Int. Cl.³ A01C *23/00*
U.S. Cl. 111—7 15 Claims



1. An implement for row application of cold liquid ammonia to the ground comprising,

an implement frame having a plurality of ground plows having ground working lower end portions,

a nurse tank connected to said frame adapted for containing pressurized ammonia,

a plurality of anhydrous converters, each operatively associated with a respective ground plow and adapted to convert said pressurized ammonia to cold depressurized liquid ammonia,

each converter comprising a generally cylindrical expansion cannister having a side wall and top and bottom ends with an inlet opening in the top end and an outlet opening in the bottom end and a plurality of spaced apart baffles within said cannister defining a plurality of expansion chambers between said baffles and top and bottom ends, said chambers being interconnected for the flow of ammonia from said inlet opening through said chambers and outwardly through said outlet opening, a supply conduit connecting said inlet opening to said nurse tank for receiving ammonia therefrom, and a single liquid discharge conduit having only two ends, one of said ends being in communication with said outlet opening and the other of said ends terminating adjacent and closely behind said lower end portion of a respective ground plow for transmission of liquid ammonia to the ground,

said outlet openings of said converters being positioned above and adjacent said lower end portions of the respective ground plows, thereby to minimize the travel distance of depressurized liquid ammonia from said outlet openings to the ground,

a vent opening being provided in each cannister in communication with one of said chambers therein at a position vertically spaced from said outlet opening, and

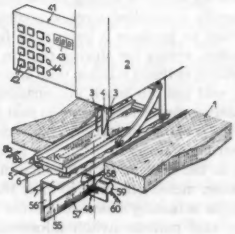
a vapor conduit communicating at one end with said vent opening and terminating at the other end thereof closely adjacent and behind said lower end portion of a respective ground plow for transmission of gas ammonia into the ground.

4,341,169

MACHINES FOR MAKING WELTED OPENINGS IN A PIECE OF MATERIAL OR SIMILAR

Jean-Louis Mainot, and Alain Picaud, both of Paris, France, assignors to The Reece Corporation, Waltham, Mass.

Continuation of Ser. No. 970,992, Dec. 19, 1978, abandoned. This application Sep. 17, 1980, Ser. No. 188,132
Claims priority, application France, Dec. 21, 1977, 77 38702
Int. Cl.³ D05B *21/00, 3/10*
U.S. Cl. 112—121.12 13 Claims



1. Apparatus for automatically regulating the operation of cutting, stitching and notching means of a sewing machine forming welted openings in pieces of material or the like comprising

memory means,

input means for feeding to said memory means sets of information for the control in a predetermined sequence of said cutting, stitching, and notching means relative to each of a plurality of desired welted openings of predetermined length,

means for selecting a sequence of sets of information from said memory,

monitoring means for sensing, during operation, the position

of the cutting, stitching, and notching members and comparing the same with said selected set of information, and

means responsive to said monitoring means for controlling the operation of said cutting, stitching and notching means,

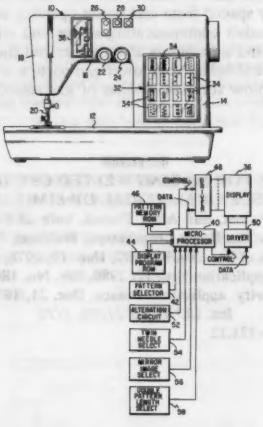
whereby said sewing machine may be caused to make, in a pre-established sequence, a succession of welted openings, each having selected lengths.

4,341,170

PATTERN DISPLAY ARRANGEMENT FOR AN ELECTRONICALLY CONTROLLED SEWING MACHINE

Howard L. Beckerman, Middletown, and Russell J. Pepe, Piscataway, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Apr. 30, 1981, Ser. No. 259,298
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **7 Claims**



1. In a sewing machine having stitch forming instrumentalities positionally controlled over a predetermined range between stitches to produce a pattern of feed and bight controlled stitches, means for storing pattern stitch information, means operating in timed relation with said sewing machine for recovering said pattern stitch information from said storing means, actuating means responsive to said pattern stitch information for influencing the feed and bight motions of said stitch forming instrumentalities to produce a pattern of stitches corresponding to the selected pattern stitch information, controllable alteration means effective to alter the operation of said feed and bight actuating means to motion different from that dictated by said pattern switch information, and a control member settable by an operator for controlling said alteration means, an arrangement for displaying a pictorial representation of the pattern comprising:

means coupled to said control member for providing an alteration signal related to the alteration effected by said alteration means;

a rectangular array of elemental display areas each capable of being selectively placed in one or the other of two optical states;

means for converting the recovered pattern stitch information in accordance with said alteration signal into positional coordinate information for said elemental display areas corresponding to stitch penetration positions and interconnections therebetween so as to simulate the upper thread path in the formation of said pattern as altered, and

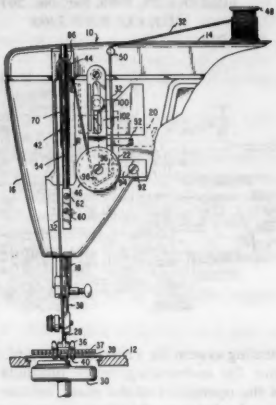
means utilizing said positional coordinate information for controlling said array of elemental display areas to display said pattern as it would be sewn by said sewing machine.

4,341,171

THREAD HANDLING DEVICE FOR LOCKSTITCH SEWING MACHINES

Ralph E. Johnson, Convent Station, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Apr. 30, 1981, Ser. No. 259,299
Int. Cl.³ D05B *49/00*
U.S. Cl. 112—250 **9 Claims**



1. In a sewing machine wherein a sewing needle and looptaker cooperate in the formation of locked stitches in a fabric, the combination comprising: a thread source; thread tensioning means to which thread extends from the thread source; a thread handling device into which the thread extends from the tensioning means and beyond which the thread extends to the needle; and a takeup for setting stitches and pulling thread through the tensioning device from the supply, the takeup being movable in one direction with thread to a stitch setting position at one end of its operating range whereat the thread is disposed for temporary retention by said device, and moveable in the opposite direction free of the thread to the other end of said operating range to permit thread to move in the thread handling device away from the temporary retention position to a position of reengagement with the takeup at said other end of its operating range and during such movement shorten the path for thread between the tensioning device and needle to supply a quantity of thread for use by the needle and looptaker; said thread handling device including a pair of elongate members, and a length of resilient material therebetween, the resilient material being carried by one of the elongate members and being compressed against the other member, the thread in the holder being located between the resilient material and the said other member, and said thread having frictional force applied thereto by the resilient material during movement of the thread in the threadhandling device.

4,341,172

SEWING MACHINE CONVERSION APPARATUS

Elmer R. Thompson, 2408 47th St., Lubbock, Tex. 79412

Continuation-in-part of Ser. No. 81,345, Oct. 3, 1979, Pat. No. 4,296,703. This application Jun. 13, 1980, Ser. No. 159,109
Int. Cl.³ D05B *27/00, 27/20*
U.S. Cl. 112—310 **16 Claims**

1. An apparatus for permitting a sewing machine having an oscillatory throw mechanism to function with a compound needle feed mechanism forming a part of the sewing machine so that the sewing machine selectably provides either a forward stitch direction or a reverse stitch direction, said apparatus comprising:

oscillation means for imparting oscillatory movement to said throw mechanism;

stitch direction control means for controlling the feed direction of said compound needle feed mechanism; and

repositioning means, responsive to said stitch direction control means, for repositioning said throw mechanism as the position of said compound needle feed mechanism changes in response to said stitch direction control means.

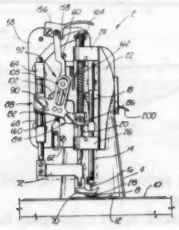
6. Apparatus for converting a sewing machine capable of sewing lightweight material to one capable of sewing heavier material and also capable of maintaining the material's seam connectable designs in alignment and further capable of repositioning a throw mechanism included within the sewing machine when the sewing machine is switched between a forward stitch mode and a reverse stitch mode, the unconverted sewing machine having a main crankshaft coupled to a primary lift shaft and to a primary feed shaft and further having a feed dog for feeding a workpiece across a workpiece supporting surface of the machine, said apparatus comprising:

means for pivotally connecting a needle bar and a feed foot to said sewing machine;

means, responsive to actuation of said primary feed shaft, for osciallatably pivoting said pivotal connecting means in a feed direction and a reverse feed direction;

means, responsive to actuation of said primary lift shaft, for clamping said workpiece against said workpiece supporting surface during said reverse feed direction pivotation;

means, responsive to actuation of said primary lift shaft, for lowering and raising said feed dog at the substantial extreme of said feed direction pivotation and at the substantially extreme of said reverse direction pivotation, respectively;



stitch direction control means for controlling said feed direction of said needle bar; and

repositioning means, responsive to said stitch direction control means, for repositioning said throw mechanism as the position of said needle bar changes in response to said stitch direction control means.

15. In a sewing machine of the type having an oscillatory throw mechanism, a compound needle feed mechanism, means for oscillating the oscillatory throw mechanism, and means for controlling the operation of the compound needle feed mechanism so that either a forward stitch direction or a reverse stitch direction is provided, the improvement comprising:

a first hook throw rod section having a first end connected to said means for oscillating the throw mechanism and having a first radially extending guide pin;

a second hook throw rod section having a first end connected to said throw mechanism and having a second radially extending guide pin;

a first tubular sleeve extending over a second end of said first hook throw rod section and having a longitudinally extending guide slot receiving said first guide pin;

a second tubular sleeve, connected to said first tubular sleeve, extending over a second end of said second hook throw rod section and having a guide slot extending obliquely from the unconnected end of said second sleeve toward the connected end of said second sleeve and receiving said second guide pin; and

sliding means, responsive to said means for controlling the stitch direction of said compound needle feed mechanism, for sliding said first and second sleeves with respect to said first and second hook throw rod sections so that said second guide pin coacts with said obliquely extending guide slot to rotate said throw mechanism and thereby reposition said throw mechanism with respect to said compound needle feed mechanism.

4,341,173

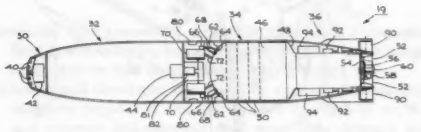
HYDROPULSE UNDERWATER PROPULSION SYSTEM

Allen C. Hagelberg, Diamond Bar, and Clark E. Allardt, Claremont, both of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Mar. 3, 1980, Ser. No. 126,781

Int. Cl.[3] **F42B** *19/30*

U.S. Cl. 114—20 A **12 Claims**



1. A hydropulse propulsion system for a weapon designed to operate under water against surface or undersea targets comprising:

a housing for the weapon;

a chamber within the housing near the aft end thereof;

a water jet nozzle projecting aft from the chamber; and

means for periodically admitting sea water to the chamber and thereafter expelling the sea water through the nozzle with substantial force to develop thrust for propelling the weapon, the expelling means including:

a plurality of discrete gas generators mounted forward of the chamber,

a corresponding plurality of tubes individually associated with the gas generators, each connecting an associated gas generator with the chamber to transmit combusted gas to the chamber at substantial pressure,

electrical ignition means coupled to the gas generators for igniting the gas generators individually, and

control means for selectively activating the ignition means to ignite the gas generators individually at successive time intervals selected to develop a speed for the weapon during at least a portion of a coasting interval between ignitions which is below the speed at which onboard acoustic detectors are disabled by flow noise.

10. The method of using the expended rocket chamber of an undersea weapon which is rocket propelled through the air to a point of water entry as a chamber for propelling the weapon under water comprising the steps of:

detecting the entry of the weapon into the water;

closing the rocket nozzle ports while leaving open a water jet nozzle;

permitting sea water to enter the spent rocker chamber;

thereafter directing gas at substantial pressure into the chamber from a selected one of a plurality of gas generators, each being mounted forward of the chamber and communicating therewith through a small tube, to eject a pulse of sea water through the water jet nozzle;

thereafter permitting the weapon to coast for a predetermined interval sufficient for its speed to reduce below a speed at which onboard acoustic detectors are disabled by flow noise; and

repeating the cycle of permitting the chamber to fill with sea water and directing gas at substantial pressure into the chamber from succeeding individual gas generators until all gas generators have been spent.

4,341,174

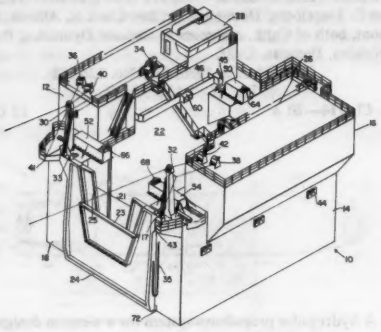
BOW DOCK

Don L. Stevens, Jr., Arlington; Steven L. Brown, Catharpin; John A. Malone, Falls Church, all of Va.; Timothy A. Knowles, Bradenton, Fla., and Thomas G. Webb, College Park, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 22, 1980, Ser. No. 142,796

Int. Cl.[3] B63C *1/02*

U.S. Cl. 114—45 19 Claims



1. A bow dock providing a dry work space for performing maintenance on the bow of a vessel, comprising:

a bottom structure;

a stern end mounted on the bottom structure, said stern end having an aperture for receiving the bow of the vessel;

a bow end mounted on the bottom structure;

port and starboard side members mounted on the bottom structure to form a well with the bow and stern ends;

a stern gate mounted on the stern end of the dock so as to close the stern end aperture, said stern gate comprising:

means conforming the stern gate to the vessel hull, said means being formed with indentations shaped complementarily to the shape of the hull at a predetermined location along the hull, and

means forming a seal between the conforming means and the vessel hull;

means mounted on facing sides of both vessel and dock for controlling both the longitudinal and transverse positions of the vessel within the dock's well, said position-control means being configured to determine the vessel's longitudinal and transverse positions in at least two locations in the well, one of said locations being defined as an intermediate stop means which is removed when the vessel is moved to the second of said two locations; and

means supporting the vessel in the well.

4,341,175

SHIPBUILDING METHOD AND COMPLEX

Jury P. Ivanov, Grazhdansky prospekt, 92/2, kv. 1., Leningrad, U.S.S.R.

Continuation of Ser. No. 48,631, Jun. 14, 1979, abandoned. This application May 1, 1981, Ser. No. 259,528

Claims priority, application U.S.S.R., Jun. 16, 1978, 2622027; Jun. 16, 1978, 2622028

Int. Cl.[3] B63B *3/02*

U.S. Cl. 114—65 R 9 Claims

1. A method of making and assemblying hulls of vessels comprising, the steps of, assemblying a section of a hull of a vessel and floating it in a first area of a basin at a certain level, moving the preassembled section of a hull into a second area while in a floating condition, removing the water from said basin and settling said preassembled section of a hull onto a bottom floor level of said second area lower than a level of a bottom of said first area, after removal of the water from said basin placing said second area in communication with a contiguous drydock and moving said preassembled section of said hull into the contiguous drydock while free of water and maintained isolated from said basin until said section of a hull is

settled at a level of said bottom floor area of said second area, again isolating said drydock from said basin second area, and repeating the steps until enough preassembled sections of a hull of a complete vessel are in said drydock while free of water for joining and assembly into a hull of a vessel.

4,341,176

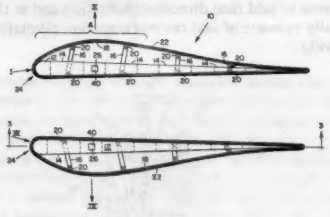
AIR FOIL WITH REVERSIBLE CAMBER

William W. Orrison, 900 NE. Loop 410, Suite E-103, San Antonio, Tex. 78209

Filed Sep. 29, 1980, Ser. No. 191,938

Int. Cl.[3] B63H *9/04;* B64C *3/48;* F03D *9/00*

U.S. Cl. 114—102 15 Claims



1. A reversible airfoil having a tapered and shaped configuration comprising:

at least two spaced apart rigid spars having in each of said rigid spars,

at least two slots therein, said slots of sufficient size to permit bars to project therethrough, each end of said bar attaching to,

flexible slats parallel to said rigid spars, and

a flexible movable skin covering the outer surfaces of said flexible slats, said bars moving in and through said slots in said rigid spars to allow said flexible slats and said skin to move in relation to said rigid spars in response to wind impacting said airfoil and thereby creating a lifting action in said airfoil.

4,341,177

SMALL WATERCRAFT

Takeshi Miyazaki, Miki, and Hiromi Ono, Akashi, both of Japan, assignors to Kawasaki Jukogyo Kaikan Kaisha, Kobe, Japan

Filed Mar. 21, 1980, Ser. No. 132,554

Claims priority, application Japan, Mar. 29, 1979, 54-41915[U]

Int. Cl.[3] B63B *43/06*

U.S. Cl. 114—125 6 Claims

1. A watercraft for planing on water comprising:

a hull of longitudinally elongated shape and reduced width;

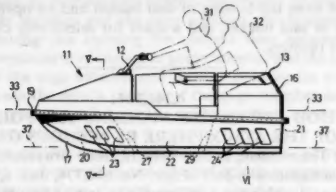
propulsion means mounted in said hull;

a bottom surface of said hull for planing by means of said propulsion means; and

at least one water accommodation compartment formed in a forward section of said hull above said bottom surface;

said water accommodation compartment formed with a closed front end and a plurality of openings on lateral

sides of a lower part of said hull for permitting water to flow into the water accommodation compartment when the watercraft is at rest and out of the water accommodation compartment when the watercraft moves to a cruising position;



said water accommodation compartment additionally formed with at least one partition wall secured to the lower part of the hull.

4,341,178

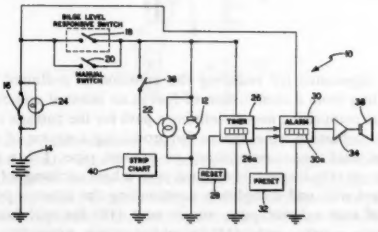
METHOD OF AND APPARATUS FOR DETECTING LEAKAGE INTO THE BILGE OF A SEA VESSEL

Douglas R. Price, 1406 Locust Ave., Ruxton, Md. 21204

Filed Jun. 27, 1979, Ser. No. 52,596

Int. Cl.³ B63B *13/00, 29/16, 37/00*

U.S. Cl. 114—183 R **23 Claims**



1. In a vessel having a bilge pump for pumping bilge water overboard and means responsive to bilge water level for operating said bilge pump, a method of detecting excessive leakage of water into the bilge, comprising the steps of monitoring on time of the bilge pump; numerically accumulating the on time of said bilge pump over a period of time; and correlating the accumulated on time of the pump for the period of time with an expected accumulated on time for normal bilge water leakage for said period of time to identify excessive bilge water leakage and, in response to said correlating step, providing an indication of excessive or non-excessive bilge water leakage.

4,341,179

DEVELOPING DEVICE

Nagao Hosono, Chofu, and Junichiro Kanbe, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1980, Ser. No. 124,712

Claims priority, application Japan, Mar. 1, 1979, 54-23700; Mar. 5, 1979, 54-25328

Int. Cl.³ G03G *15/09*

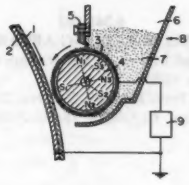
U.S. Cl. 118—658 **30 Claims**

1. A developing device for developing a latent image supported on latent image bearing means by supplying a developer thereto, comprising:

developer supporting means provided in facing relation to said latent image bearing means;

developer supply means for supplying the developer supporting means;

thickness controlling means for adjusting the developer present on said developer supporting means to a uniform thickness wherein said thickness controlling means adjusts the developer thickness to a value smaller than the distance between said latent image bearing means and said developer supporting means, thereby forming a clearance between said latent image bearing means and the developer layer; and



magnetic field generating means for generating a magnetic field in a developing zone for developing the latent image supported on said latent image bearing means;

wherein said developer is a magnetic developer containing magnetic powder in a proportion not less than 20 wt.% ; and wherein said magnetic field generating means is stationary and adapted to generate a flux density not in excess of 950 gauss on the surface of said developer supporting means in the developing zone.

4,341,180

ANIMAL LITTER AND PROCESS

Louis R. Cortigene, and Robert G. Wright, both of Portage, Mich., assignors to James River Corporation of Virginia, Richmond, Va.

Division of Ser. No. 672,471, Mar. 31, 1976, Pat. No. 4,203,388. This application Jul. 5, 1979, Ser. No. 55,003

Int. Cl.³ A01K *29/00*

U.S. Cl. 119—1 **13 Claims**

1. A process for making animal litter which comprises partially de-watering waste rejects from a secondary fiber plant to a consistency such that the partially de-watered waste can be formed into pellets, forming the partially de-watered waste into pellets, and then drying said pellets, in which the partially de-watered waste contains from about 32 percent to about 40 percent water.

4,341,181

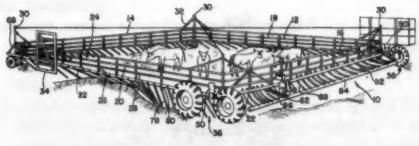
LIVESTOCK CONFINEMENT PASTURE MACHINE

Walter R. Fair, P.O. Box 306, Menno, S. Dak. 57045

Filed Feb. 6, 1981, Ser. No. 232,010

Int. Cl.³ A01K *3/00*

U.S. Cl. 119—20 **10 Claims**



1. A livestock confinement pasture machine comprising confinement means for confining livestock within a defined area, said confinement means having a front end and a rear end, drive assembly means mounted upon said confinement means for moving said confinement means at a predetermined speed to control the grazing of livestock confined thereby, said drive assembly means including at least one drive wheel unit mounted on said confinement means, a motor connected for driving said drive wheel unit, and presettable automatic timing

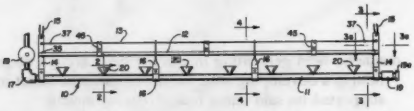
means for operating said motor for a time selected prior to starting said motor to move said confinement means during the time selected and to stop the movement of said confinement means when the time selected has elapsed, and steering means for controlling the direction of movement of said confinement means mounted upon said confinement means, said steering means operating to sense and follow a preformed direction control path for said livestock confingement pasture machine.

4,341,182

ANIMAL WATERING APPARATUS

Francis Rustin, and Morris C. Keller, both of 2170 E. Blaine, Springfield, Mo. 65803

Filed Nov. 26, 1980, Ser. No. 210,687
Int. Cl.³ A01K *39/00, 7/06*
U.S. Cl. 119—75 **17 Claims**



1. Animal watering apparatus comprising

a length of water pipe; a pair of elongated rigid end support members having their respective lower ends fixed to said pipe, adjacent to the opposite ends thereof;

an elongated compression member disposed between said support members in generally parallel relation to said pipe; said compression member being secured at its opposite ends to said support members intermediate the ends thereof;

an elongated tension member connected between said support members adjacent to the upper ends thereof, in generally parallel relation to said compression member and said pipe; said tension member being stressed in tension, whereby said compression member is stressed in compression and said pipe is stressed in tension;

a plurality of drinker valves, to be operated by the animals, mounted in longitudinally spaced relation on said pipe;

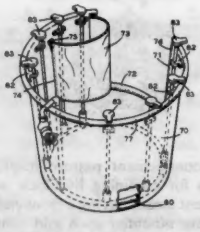
and said support members having means at the upper ends thereof for suspending said watering apparatus from an overhead support.

4,341,183

VETERINARY APPARATUS

Louis A. Metzler, 365 Chestnut St., Stirling, N.J. 07980

Continuation-in-part of Ser. No. 10,136, Feb. 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 840,122, Oct. 7, 1977, abandoned. This application Apr. 29, 1980, Ser. No. 144,878
Int. Cl.³ A61D *11/00*
U.S. Cl. 119—158 **8 Claims**



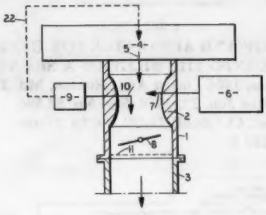
6. A veterinary therapeutic apparatus comprising, a bottom fluid header, nipples protruding upwardly from said bottom fluid header in fluid communication therewith, a plurality of spray tubes, each of said spray tubes being pivotally mounted on said bottom fluid header, said spray tubes each being in fluid communication with a respective one of said upwardly protruding nipples in order to selectively orient said spray tubes in predetermined directions, a bucket for generally containing said bottom fluid header and said spray tubes, said bucket having a portion of its side removed in order to form a sill spaced from the bottom of said bucket and an opening thereabove in said bucket, and a sheet for selectively closing said bucket opening.

4,341,184

METHOD AND DEVICE AVOIDING THE POLLUTION OF THE ATMOSPHERE BY NOXIOUS GASES

Maria Temmerman, 3, Rue Belliard, 1000 Bruxelles, Belgium

Continuation-in-part of Ser. No. 646,774, Jan. 6, 1976, abandoned, which is a continuation-in-part of Ser. No. 580,459, May 23, 1975, abandoned. This application Jul. 23, 1979, Ser. No. 60,116
Int. Cl.³ F02D *19/00*
U.S. Cl. 123—25 F **12 Claims**



1. Apparatus for reducing the emission of pollutant gases resulting from a combustion of fuel in an internal combustion engine comprising means defining a path for the passage of fuel to a combustion zone, means for producing a stream of water vapor, said means comprising an exhaust pipe (**17**), a water reservoir (**13**) above said exhaust pipe, a heat exchanger (**16**) in contact with and completely surrounding the exterior periphery of said exhaust pipe, an air vent (**18**) for said heat exchanger, a water outlet (**14**) for said reservoir, projecting from the reservoir and extending into said heat exchanger, valve means (**15**) on said outlet for controlling the flow of water from said reservoir to said heat exchanger, and a conduit (**22**) for passing the steam produced in the heat exchanger into contact with a catalyst comprising cerium or germanium while maintaining the fuel out of contact with said catalyst, thereby producing nascent hydrogen by the contact of said water vapor with the catalyst, and a supplemental conduit for thereafter passing the stream of vapor into said path and delivering it with said fuel ro the combustion zone.

4,341,185

FLUID-COOLED VALVE HOUSING FOR AN ENGINE HAVING TWO EXHAUST VALVES PER CYLINDER

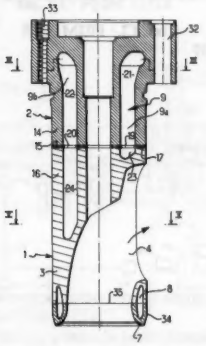
Jean-Pierre Pollet, Arnouville les Gonesse, France, assignor to Societe d'Etudes de Machines Thermiques S.E.M.T., Saint-Denis, France

Filed Dec. 4, 1979, Ser. No. 100,245
Claims priority, application France, Jan. 29, 1979, 79 02192
Int. Cl.³ F01P *3/14*
U.S. Cl. 123—41.85 **22 Claims**

1. An internal combustion engine having a cylinder, a right-hand and a left-hand valve for said cylinder, and respective right-hand and left-hand fluid-cooled valve housing assemblies for said valves, each housing assembly including a cage member having a circumferential outer wall with a lateral opening in the wall connecting to a common passage of the cylinder, and an annular valve seat portion at one end of the cage member having an annular space for fluid coolant therein, a valve

guide member at the other end of the cage member, said valve guide member having axially extending circumferentially spaced coolant supply and coolant return compartments connecting to the annular space in the valve seat portion through coolant supply and return passages provided within the cage member, and an intermediate element interposed between the valve guide member and the cage member, the intermediate element having one opening for coolant flow between the supply compartment of the valve guide member and the supply passage of the cage member and another opening for coolant flow between the return passage of the cage member and the return compartment of the valve guide member, wherein the improvement comprises:

said cage member being provided with at least one portion of said coolant supply and coolant return compartments, said intermediate element thereby dividing the coolant supply and coolant return compartments into upper coolant supply and coolant return compartment portions in the



valve guide member and lower coolant supply and coolant return compartment portions in the cage member;

the angular extents of the one and the other openings in the intermediate element being less than the angular extents of the supply and return compartment portions, respectively, in the valve guide member and the cage member adjacent to the intermediate element;

the upper supply and return compartment portions in the valve guide member being angularly shifted relative to the lower supply and return compartment portions of the cage member, with direct communication between the supply compartment portion of one of said members and the return compartment portion of the other of said members being precluded by said intermediate element;

the valve guide member of the right-hand housing being a mirror image of the valve guide member of the left-hand housing; and

the cage member of the right-hand housing being identical to the cage member of the left-hand housing.

4,341,186

AIR INTAKE SYSTEM FOR A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Bertold Mayr, Gauting, and Jiri Seidl, Munich, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

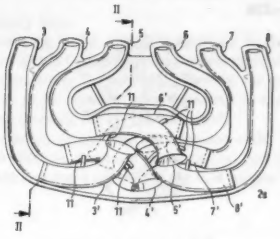
Filed Apr. 7, 1980, Ser. No. 138,075

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914172

Int. Cl.³ F02B *75/18*

U.S. Cl. 123—52 M **9 Claims**

1. An air intake system for a multi-cylinder internal combustion engine such as a fuel-injected internal combustion engine, the intake system comprising a multi-part distributor housing which is divided into essentially two half shells which are interconnected along a dividing plane which extends in a longitudinal direction across said housing, first and second individual intake pipes connected to the distributor housing, openings of the first and second intake pipes lying in mutual opposition within the distributor housing on the division thereof in said longitudinal direction, characterized in that bent auxiliary pipes are arranged at the respective openings of the



individual intake pipes, in that the auxiliary pipes are arranged in the distributor housing in a mutually overlapping relationship when viewed along said dividing plane, said auxiliary pipes having openings at opposite ends thereof which face in different directions, and in that the respective auxiliary pipes are fixed in the openings of the respective intake pipes under a pretensioning by the two half shells of the distributor housing.

4,341,187

SEAL FOR INTERNAL COMBUSTION ENGINE HAVING A NOISE-DEADENING SHROUD

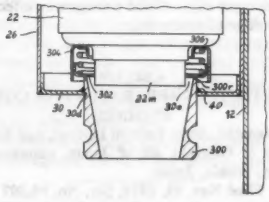
Erich Absenger, Ruhstorf, Fed. Rep. of Germany, assignor to Motorenfabrik Hatz GmbH & Co. KG, Ruhstorf, Fed. Rep. of Germany

Filed Nov. 5, 1979, Ser. No. 91,442

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855220

Int. Cl.³ F02B *77/00*; G10K *11/00*; F16L *55/02*

U.S. Cl. 123—198 E **5 Claims**



1. An exhaust arrangement for an internal combustion engine, comprising:

exhaust means supported on said engine for conducting exhaust gases away from said engine, said exhaust means having an outlet pipe at the end thereof remote from said engine;

a sound-deadening enclosure surrounding and spaced from said exhaust means, said enclosure being supported on said engine independently of said exhaust means and having a pipe connection extending through and securely supported on a wall thereof, said outlet pipe being telescopically disposed within and free of contact with the end of said pipe connection which is within said enclosure;

an annular seal surface provided on the axially facing surface on said of said pipe connection;

an annular cover member closely encircling said outlet pipe and engaging said annular seal surface; and

first means for maintaining said cover member in sealing engagement with said seal surface on said pipe connection.

4,341,188
TWO-CYCLE INTERNAL COMBUSTION ENGINE INCLUDING MEANS FOR VARYING CYLINDER PORT TIMING

James S. Nerstrom, Gurnee, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

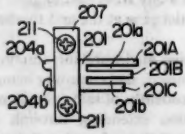
Filed Apr. 21, 1980, Ser. No. 141,906
Int. Cl.³ F02B 75/02
U.S. Cl. 123—324 6 Claims

1. A two-cycle internal combustion engine comprising an engine block including a cyclindrical wall defining a cylinder having a head end, a piston mounted for reciprocative movement in said cylinder relative to said cylinder head end, and a passage in said engine block terminating at said cylindrical wall in a port having upper and lower edges at given distances from said cylinder head end and having side edges, and valve means mounted for movement inside said passage relative to said port to selectively vary the effective distance of one of said port edges from said cylinder head end, said valve means comprising a valve member including an elongated barrel section and a passageway in said barrel section for registering with said port and having an inlet which has a transverse edge, side edges, and a shape different from the shape of said port, said valve member being mounted transversely of said passage and adjacent said port for rotational movement between a first position wherein said passageway inlet does not substantially affect the effective distance of said one edge of said port from said cylinder head end or the effective opening area of said port and a second position wherein the transverse and side edges of said passageway inlet extend inwardly from the respective edges of said port to define a smaller opening area, with the transverse edge of said passageway effectively acting as the upper edge of said port.

4,341,189
KNOCK DETECTING APPARATUS FOR COMBUSTION ENGINES

Hiroaki Yamaguchi, Anjo; Tadashi Hattori, and Yoshinori Ootsuka, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 19, 1979, Ser. No. 95,307
Claims priority, application Japan, Jun. 4, 1979, 54-70494
Int. Cl.³ F02P 5/04; F02B 33/00
U.S. Cl. 123—425 3 Claims

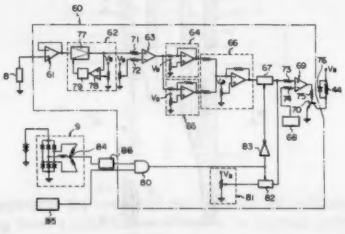


1. A knock detecting apparatus for an internal combustion engine comprising a single vibrating plate of piezoelectric element branched into a plurality of vibrating reeds having different lengths by forming a recess in said vibrating plate from one end thereof, said plurality of vibrating reeds being integral at the other end of said vibrating plate, and having respective resonance characteristics in different frequency bands within a frequency range of the knocking of said combustion engine, an electrode electrically connected to said vibrating plate at said other end thereof to deliver an output voltage representing resonance characteristics of said plurality of vibrating reeds, and a housing member for supporting said vibrating plate securely at said other end thereof as a cantilever.

4,341,190
AIR-FUEL RATIO CONTROL DEVICE OF AN INTERNAL COMBUSTION ENGINE

Norikatsu Ishikawa, Mishima; Haruyuki Obata, Susono; Hidemi Onaka, Susono; Takao Tate, Susono; Toshio Tanahashi, Susono, and Isamu Hagino, Aichi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 25, 1981, Ser. No. 237,949
Claims priority, application Japan, May 14, 1980, 55-62703; May 14, 1980, 55-62704; May 14, 1980, 55-62705; May 14, 1980, 55-62706
Int. Cl.³ F02M 7/18
U.S. Cl. 123—439 39 Claims



1. An air-fuel ratio control device of an internal combustion engine having at least one cylinder, an intake passage and an exhaust passage, said device comprising:

a carburetor arranged in the intake passage and having a choke apparatus for reducing an air-fuel ratio of a mixture fed into the cylinder from said carburetor when the engine is started, said carburetor having a fuel reservoir and a fuel outflow passage which interconnects said reservoir to the intake passage;

an air bleed passage interconnecting said fuel outflow passage to the atmosphere for feeding air into said fuel outflow passage;

a temperature reactive switch for detecting the temperature of the engine to produce a detecting signal indicating whether the temperature of the engine is lower or higher than a first predetermined temperature;

an air-fuel ratio detector arranged in the exhaust passage and detecting components of an exhaust gas in the exhaust passage for producing a detecting signal which has a potential level which becomes high or low when the air-fuel ratio of said mixture becomes less or larger than the stoichiometric air-fuel ratio, respectively;

a detecting signal processing circuit having a first comparator for comparing the level of the detecting signal of said air-fuel ratio detector with a reference voltage to produce an output voltage, said processing circuit having an integrating circuit for integrating the output voltage of said first comparator to produce a first control signal having a level which varies within a fixed range of voltage and becomes large as the air-fuel ratio of said mixture becomes small;

control voltage generating means for generating a second control signal having a first level which is larger than said fixed range of voltage;

switching means in response to the detecting signal of said temperature reactive switch for selectively producing an output voltage which is equal to the level of said first control

signal or the level of said second control signal when the temperature of the engine is higher or lower than said first predetermined temperature, respectively;

a drive pulse generator for generating continuous drive pulses, each having a width which is proportional to the output voltage of said switching means, and;

control valve means arranged in said air bleed passage and actuated in response to said drive pulses for increasing a flow area of said air bleed passage in accordance with an increase in the width of said drive pulse.

4,341,191

FUEL INJECTION TYPE CARBURETOR

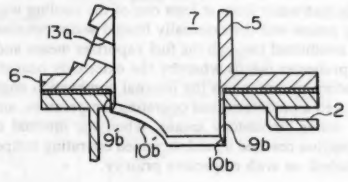
Keiso Takeda; Shozo Inouye, and Toshimi Kashiwakura, all of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 15, 1980, Ser. No. 169,205

Claims priority, application Japan, Aug. 1, 1979, 54-97209

Int. Cl.³ F02M *61/14*

U.S. Cl. 123—445 **1 Claim**



1. A fuel injection type carburetor of multicylinder internal combustion engines comprising:

a throttle body having a throttle bore extending substantially vertically and being connected at the bottom portion thereof to a collecting portion of intake manifolds extending substantially horizontally, said throttle body having an extension formed integrally with said throttle body and extending downwardly into said collecting portion of the intake manifolds, said extension comprising a cylindrical thin wall formed integrally and coaxially with said throttle bore and having a sharp peripheral knife edge at the lower end thereof;

a throttle valve in said throttle bore;

a linear injection type fuel injection valve having a fuel injection nozzle in one side of said throttle bore downstream from said throttle valve and inclined toward the downstream side, so that a fuel jet injected from said fuel injection nozzle strikes against said extension of said throttle bore; and

said cylindrical thin wall extending vertically downwardly at the side of said throttle bore substantially opposite said fuel injection valve to a substantially greater extent than at said one side of said throttle bore.

4,341,192

FUEL INJECTION SYSTEM

Heinrich Knapp, Leonberg; Wolfgang Maisch, Schwieberdingen; Klaus-Jürgen Peters, Affalterbach; Michael Wissmann, Gerlingen; Günther Jäggle, and Peter Schelhas, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 11, 1980, Ser. No. 129,496

Claims priority, application Fed. Rep. of Germany, May 8, 1979, 2918479

Int. Cl.³ F02M *69/00*

U.S. Cl. 123—452 **4 Claims**

1. In a fuel injection system for an internal combustion engine, including

an intake manifold, through which air is supplied to the engine,

a measuring device which is disposed within the intake manifold and which is displaceable therein against a restoring force in accordance with the air quantity flowing through the intake manifold,

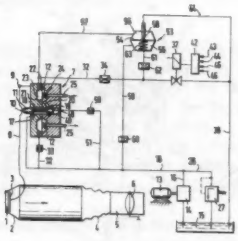
an arbitrarily actuatable throttle valve which is disposed in series with the measuring device within the intake manifold,

a fuel supply line,

a fuel metering valve, which is disposed in the fuel supply line and which includes a movable element whose position is determined by the measuring device, for metering a fuel quantity to be injected corresponding to the air quantity flowing through the intake manifold,

a control pressure line, having opposite ends,

a control throttle, disposed between one end of the control pressure line and a portion of the fuel supply line upstream



of the metering valve, through which the control pressure line communicates with the fuel supply line,

an electromagnetic valve, which is disposed at the other end of the control pressure line, for relieving the pressure in the control pressure line,

valve actuating means for actuating the electromagnetic valve in accordance with selected operational characteristics of the engine,

pressure control means for controlling the pressure in the fuel supply line upstream of the metering valve, and

a control valve for controlling the pressure differential at the metering valve, the control valve including a movable valve element having one side subjected to the fuel pressure downstream of the metering valve and an opposite side subjected to the pressure of the control pressure line,

the improvement which comprises:

a pressure limitation element which is disposed upstream of the electromagnetic valve in the control pressure line.

4,341,193

LOW PRESSURE THROTTLE BODY INJECTION APPARATUS

Lauren L. Bowler, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 853,331, Nov. 21, 1977, abandoned. This application Jul. 6, 1978, Ser. No. 922,339

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—472 **10 Claims**

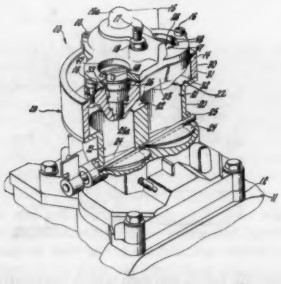
1. A low pressure fuel supply mechanism for a spark ignition internal combustion engine having a throttle body defining a substantially vertical air intake passage and a movable throttle therein, comprising:

an injector mechanism mounted above said air intake passage and adapted to receive fuel at said low pressure, said injector mechanism having a fuel discharge passage through which fuel flows generally downwardly and is discharged into said air intake passage, the mechanism defining a valve seat at the upper end of the passage and a fuel space about said valve seat, the mechanism further

having a vertically movable valve member effective to close said fuel discharge passage at said seat;

said injector mechanism also defining (a) an annular fuel well substantially horizontally aligned with said fuel space and radially outboard the same (b) a generally horizontally oriented fuel intake passage into said fuel space from said annular fuel well (c) a fuel intake passage opening into said fuel well at one peripheral point and (d) a fuel return passage opening from said fuel well at a point circumferentially spaced from said one peripheral point to return excess fuel from the same, whereby excess fuel circulates peripherally about the annular fuel well to establish cooling heat flow communication from the circulating fuel to the fuel at the said fuel discharge passage;

the passages being so proportioned and located that the amount of fuel entering the injector mechanism is substantially greater than the fuel injected into the throttle body in an amount sufficient to avoid substantial fuel vaporization at the metering orifice.



10. A fuel-air management system comprising a throttle body adapted for connection to an intake manifold of an internal combustion engine, said throttle body having an induction bore which includes:

a throttle assembly having a rotatable throttle plate for controlling the amount of air flow through said induction bore;

a fuel injector jacket having a pressurized fuel accumulation chamber;

suspension means for suspending said fuel injector jacket above said air induction bore and throttle plate; and

an intermittent fuel injection valve mounted in said jacket to meter fuel from said accumulation chamber into the air flow of the induction bore before it reaches the throttle plate, said injection valve having a hollow conical spray pattern wherein the spray pattern directs injected fuel at the opening between the periphery of the throttle plate and the wall of the air induction bore wher the engine runs under open throttle operation and above said opening when the engine runs under closed throttle operation.

4,341,194

INTERNAL COMBUSTION ENGINE, ESPECIALLY FOR TRUCKS DRIVEN WITH GAS-STORED IN LIQUID CONDITION IN A FUEL TANK

Gerhard Wolters, Gaggenau, and Horst Bergmann, Esslingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

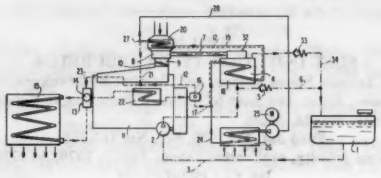
Filed Aug. 29, 1980, Ser. No. 182,824

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1979, 2934797

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **21 Claims**

1. A water-cooled internal combustion engine adapted to be operated on a gaseous fuel stored as a liquid fuel in a fuel tank, the internal combustion engine includes a cooling water circulatory means, a fuel vaporizer means adapted to be heated at least by the cooling water circulatory means, an intake air preheater means adapted to be heated at least by the cooling water circulatory means, an intake air/gas mixer means, and a throttle valve means arranged between the air/gas mixer means and working cylinders of the internal combustion engine, characterized in that an externally heated water circulatory means is provided, conduit means are provided for communicating the circulatory means with each other, and the thermostatic control valve means are arranged in the conduit means for selectively controlling the communication between



the two circulatory means in dependence upon a temperature such that water from at least one of the cooling water circulatory means and the externally heated water circulatory means are conducted through the fuel vaporizer means and the intake air preheater means whereby the externally heated water circulatory means, when the internal combustion engine has not reached a predetermined operating temperature, and the cooling water circulatory means, when the internal combustion engine has reached a predetermined operating temperature, are switched on with respective priority.

4,341,195

IGNITION SYSTEM FOR SPARK PLUGS CAPABLE OF REMOVING CARBON DEPOSITS

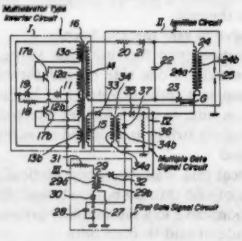
Kanemitsu Nishio, Komaki, and Takashi Suzuki, Nagoya, both of Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 893,415, Apr. 4, 1978, abandoned. This application Jan. 18, 1980, Ser. No. 113,326

Claims priority, application Japan, Apr. 6, 1977, 52-38504

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—598 **3 Claims**



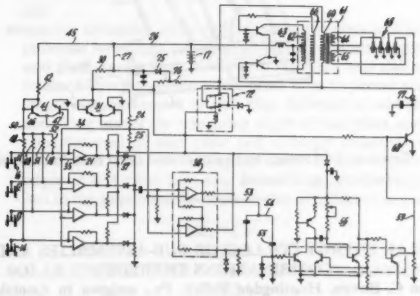
1. An ignition circuit for spark plugs capable of removing carbon deposits, comprising a multivibrator type inverter circuit connected to a low direct current source and producing a high alternating current voltage; an ignition circuit including a condenser operative to be charged by said high alternating current voltage, a silicon controlled rectifier having a gate terminal and a creeping discharge spark plug; a first gate signal circuit connected between said multivibrator type inverter circuit and said gate terminal of the silicon controlled rectifier and including an interrupter operatively connected with an engine, said first gate signal circuit being operative to make conductive said silicon controlled rectifier in response to the operation of said interrupter and produce a single spark; and a multiple gate signal circuit connected between said multivibra-

tor type inverter circuit and said first gate signal circuit, said multiple gate signal circuit being connected to said gate terminal of the silicon controlled rectifier and operative to make conductive said silicon controlled rectifier in response to the operation of said interrupter and produce a multiple spark.

4,341,196
IGNITION INITIATING SIGNAL FROM A FUEL INJECTION NOZZLE VALVE

Robert E. Canup, Poughkeepsie, and Martin Alperstein, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 27, 1980, Ser. No. 200,620
Int. Cl.³ F02P *1/00*
U.S. Cl. 123—643 **7 Claims**



1. In an ignition system for an internal combustion engine wherein said system employs a fuel injection nozzle valve for producing an ignition spark control signal, said injection nozzle valve being actuated by fuel pressure to inject said fuel, said fuel pressure creating an electrically insulating layer at said valve when said fuel is injected, and said valve creating said control signal when unseated, the improvement comprising

electrical circuit means for limiting both voltage and current of said control signal to eliminate breakdown of said insulating layer and pitting of said valve seat.

7. In an ignition system for an internal combustion engine wherein

said system employs a fuel injection nozzle valve for producing an ignition spark control signal, said injection nozzle valve being actuated by fuel pressure to inject said fuel, said fuel pressure creating an electrically insulating layer at said valve when said fuel is injected, and said valve creating said control signal when unseated, the improvement comprising electrical circuit means for limiting both voltage and current of said control signal to eliminate breakdown of said insulating layer and pitting of said valve seat,

said electrical circuit means comprising

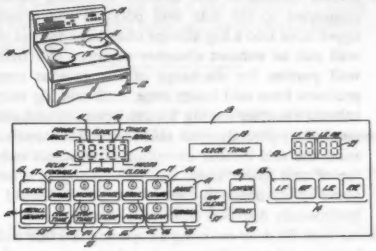
a constant voltage unit for limiting the voltage amplitude of said signal and having a first resistor in series with a pair of transistors connected with the collector to emitter paths in series and with each base connected to its collector, and

a second resistor in series with the output of said constant voltage unit for limiting the current amplitude of said signal.

4,341,197
PROMPTING CONTROL

Orville R. Butts, West Lafayette, Ind., assignor to Roper Corporation, Kankakee, Ill.

Filed Jul. 25, 1980, Ser. No. 172,252
Int. Cl.³ F24C *3/08*; H05B *3/68*; G08C *9/00*
U.S. Cl. 126—39 BA **6 Claims**



1. In a multifunction cooking appliance having at least one cooking station, a control arrangement comprising:

(a) keys for entry of control information for the cooking appliance functions, a first group of the keys having a plurality of identifiable modes of operation;

(b) an alphanumeric prompting display for providing alphabetic prompting commands to assist in sequential entry of control information for the cooking functions through the keys (a); and

(c) a processor-based control which includes

(1) means for selecting one of the identifiable key modes in dependence upon the type of control information to be entered through the group of keys,

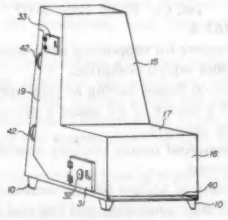
(2) means for activating the prompting display in dependence upon the control information being entered through the group of keys, and

(3) means for transferring control information through the group of keys to a cooking station for the cooking functions of the cooking appliance.

4,341,198
WOOD BURNING STOVE

Paul D. Sullivan, 15 Juniper La., Medfield, Mass. 02052

Continuation-in-part of Ser. No. 4,702, Jan. 19, 1979, abandoned. This application Nov. 10, 1980, Ser. No. 205,345
Int. Cl.³ F24B *7/00*
U.S. Cl. 126—68 **32 Claims**



1. A wood burning stove comprising a housing defined by a horizontally disposed top housing surface and bottom, a vertically disposed back wall, a front wall comprising a planar upper wall portion, and a planar vertically disposed lower wall portion, and side walls that extend between and connect together the front wall and back wall, top housing surface and bottom, and which in turn define a lower zone for accommodating a wood burning fire comprising a plurality of logs of predetermined maximum length arranged in parallel relation-

ship to one another and an upper zone which terminates at the top of said lower zone;

a planar horizontally disposed front wall portion which connects said planar upper wall portion to said planar lower front wall portion suitable for accommodation of cooking utensils and which determines the said top of the said lower fire accommodating zone;

a divider located in said housing extending between and connected to the side wall portions and dividing said upper zone into a log storage chamber adjacent said back wall and an exhaust chamber adjacent said front upper wall portion for discharge of the gaseous combustion products from said lower zone, both said log storage and exhaust chamber having bottom openings and each communicating directly with said lower fire accommodating zone, the said divider extending downwards only to the top of said lower zone, and terminating at a horizontal plane approximate to that of the plane defined by said horizontally disposed front wall portion;

an air tight fill door covering an opening in a side wall in said housing and providing access to the top portion of said log storage chamber for the loading of logs, the said log storage zone being sealed and air tight when said air tight fill door is closed and having no other communication to the atmosphere other than the said bottom opening thereof communicating with the lower zone whereby the exhaust gases during start-up and operation of the stove will move to and exhaust only through the said exhaust chamber;

an air tight fire door covering another opening located adjacent said vertical front wall portion in a side wall in said housing and providing access to said lower fire accommodating zone;

a flue discharge opening located in said housing and communicating with the top portion of said exhaust chamber; and

means provided in said housing in said lower zone for introduction of air into said lower zone.

4,341,199

BIO-MASS BURNER WITH GRATE THEREFOR AND METHOD OF OPERATION

Calvin H. Hand, Jr., Rte. #3, Box 407, Tappahannock, Va. 22560; David J. Hand, Rte. #1, Box 140A, Warsaw, Va. 22572, and John A. Careatti, Rte. #1, Box 154, Howertons, Va. 22475, assignors to Calvin H. Hand, Jr., Tappahannock; David J. Hand, Warsaw; John A. Careatti, Howertons and Herbert J. Mulqueen, Jr., Tappahannock, all of, Va.

Filed Jun. 13, 1980, Ser. No. 159,226

Int. Cl.³ F23H *1/02, 3/00*

U.S. Cl. 126—163 A **6 Claims**

1. A grate structure for supporting a bio-mass fuel product in a burning chamber which comprises

a. a first manifold means having an inlet aperture communicating with a source of air under a pressure greater than atmospheric pressure,

b. a second manifold means laterally spaced from said first manifold means,

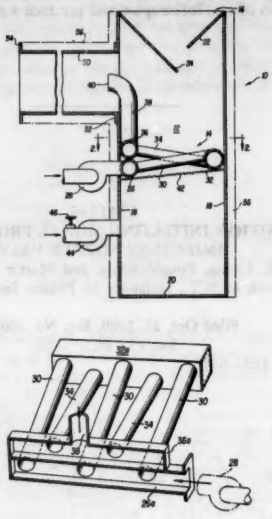
c. a first plurality of hollow tubular members having imperforate walls interconnecting said first and second manifold means,

d. a third manifold means laterally spaced from said second manifold means,

e. and a second plurality of hollow tubular members having imperforate walls interconnecting said second and third manifold means,

f. said first and second plurality of hollow tubular members establishing a crisscross arrangement in vertical elevation for supporting a solid fuel product in said burning chamber,

g. said source of air traversing a path sufficiently long in moving through said grate means from the inlet at said



first manifold means to an exit at said third manifold means to become superheated.

4,341,200

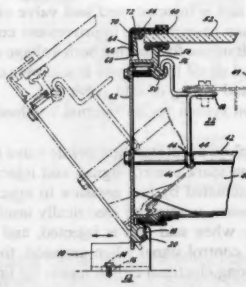
SOLAR ENERGY COLLECTOR SUB-ASSEMBLIES AND COMBINATIONS THEREOF

John C. Bowen, Huntingdon Valley, Pa., assignor to Ametek, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 935,406, Aug. 21, 1978, Pat. No. 4,201,190. This application Mar. 28, 1980, Ser. No. 134,961

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—417 **1 Claim**



1. Solar collector assembly including:

solar collector mounting member and mating solar collector housing mounting means, said member comprising a U-shaped channel having an elongated bolt hole in the central leg thereof and aligned shaft holes in the side legs thereof, said means comprising an exterior shaft receiving channel along a side of said housing, said channel said channel having slots therein perpendicular to the length of said channel and space to receive the side legs of said U-shaped channel member, and a shaft in said shaft-receiv-

ing channel projecting through the holes of said U-shaped channel member;

a spring loaded solar collector top glazing and seal locking means including a solar collector side member having an upwardly facing top glazing receiving member inward of the collector side and an upward projection outward of said glazing receiving member including an outwardly faced spring receiving tip and an upwardly pointing locking tip, and said means further including a spring member extending along the length of said member with a locking dog adapted to engage said outwardly faced spring receiving tip and a vertical channel adapted to receive, upon slight deflection of said spring member, said upwardly pointing locking tip, said deflection in turn urging downwardly an inward projection of said spring member and thereby adapted to clamp a top glazing member against said upwardly faced top glazing receiving member of said collector side member;

solar collector housing corner mating side members with corner locking means, said side members having inward projections along the length thereof near the top and bottom thereof, said inward projections adapted to receive and retain therein a corner locking piece having two angularly disposed legs, each of which fits into the inward projections of one of said corner mating side members; and

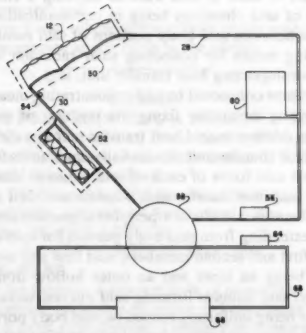
means for mounting a rectangular collector plate in a solar collector housing comprising, along two opposite edges of said plate, spring clips fastened to said plate and slidingly retained above and below said plate so as to permit slight lengthwise movement of said clips fastened to said plate and along one of the remaining edges of said plate, spring clips fastened to said plate and slidingly retained only above said plate, and along the other of said remaining edges of said plate, fastening means fastened to said plate and to the adjacent side member of said collector housing.

4,341,201

SOLAR ENERGY COLLECTING AND UTILIZATION SYSTEM

Ronald W. Ziemann, 4307 Moonbeam Dr., Colorado Springs, Colo. 80916

Filed Feb. 29, 1980, Ser. No. 126,141
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—422 **8 Claims**



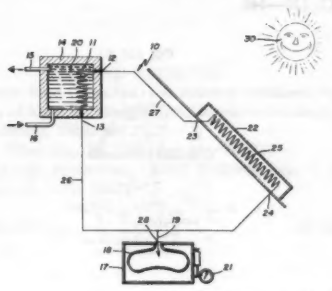
1. A solar energy collecting and utilization system comprising a matrix of double convex lenses formed by a plurality of lens units disposed in a generally planar array, each said lens unit comprising a plurality of lenses having a common focal length and being arranged in dome-like configuration; a solar heat collecting surface for receiving solar energy focused thereon comprising one surface of a thin metallic member and shaped to conform to the curve defined by a line drawn through the focal points of the lenses of said plurality of lens units; means for extracting the radiant solar heat comprising a heat collecting fluid circulated in contact with the surface of said metallic member opposite to said heating collecting surface; and a back-up system including a further heat collecting member having one surface in contact with said heat collecting fluid and infra-red heating means for heating said further heat collecting member; said infra-red heating means comprising a plurality of infra-red lamps and a like plurality of lenses for focusing the infra-red light from said lamps on said further heat collecting surface.

4,341,202

PHASE-CHANGE HEAT TRANSFER SYSTEM

Roger F. French, Jackson, N.H., assignor to Aptec Corporation, Los Angeles, Calif.

Continuation of Ser. No. 870,624, Jan. 19, 1978, abandoned. This application Jan. 17, 1980, Ser. No. 112,939
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—433 **16 Claims**



1. A heat collection apparatus using phase-change heat transfer comprising:

a system including:

a condenser housing including means for containing a condensing fluid therein;

a condenser within the housing for transfer of heat from a phase-change fluid within the condenser to the condensing fluid within the housing and about the condenser;

a heat collector located in a position for exposure of a phase-change fluid therein to a relatively high temperature; and

closed circuit conduit means interconnecting the condenser and the heat collector for movement of heat therebetween via a phase-change heat transfer fluid within the system formed by the condenser, heat collector, and conduit means; and

means attached to the system at a location vertically below the condensor and collector for removing sufficient phase-change fluid from the system, when the condensing fluid reaches a predetermined temperature, to prevent movement of heat through the system from the heat collector to the condenser.

5. Solar water heater making use of phase-change heat transfer, comprising:

(a) a condenser having an inlet and an outlet, which condenser is in contact with the water to be heated;

(b) a solar collector having a bottom inlet and a top outlet and having an inner conduit that connects the inlet and the outlet, the conduit being suitable for exposing a heat-transfer medium in the conduit to solar energy, the collector outlet being located below the condenser;

(c) conduits joining the outlet of the collector to the inlet of the condenser and the outlet of the condenser directly to the inlet of the collector to form a closed circuit;

(d) a phase-change liquid heat transfer medium located within the circuit; and

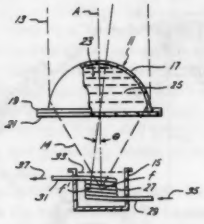
(e) an accumulator having means for regulating the pressure therein at a pressure substantially equal to the vapor-pressure of the phase change fluid at a temperature corresponding to a maximum predetermined water temperature and having an inlet that is connected to the circuit below the collector.

4,341,203

SOLAR ENERGY COLLECTOR

Dan E. Bloxsom, P.O. Box 36116, Houston, Tex. 77042

Division of Ser. No. 956,220, Oct. 30, 1978, Pat. No. 4,305,383.
This application Jun. 8, 1981, Ser. No. 271,654
Int. Cl.[3] F24J *3/02*; G02B *1/06*
U.S. Cl. 126—440 5 Claims



1. A solar energy collector, comprising:

concentrating means for concentrating solar radiation including a plurality of converging lenses each having a curved surface, an optical axis, a principal focus and a focal length, said concentrating means including a first member and a second member of transparent thermoplastic, said first and second members each having a body portion, said body portions being disposed in nested, spaced apart interrelationship, one of said body portions of said members having a plurality of spaced apart hollow hemispherical bubbles bulging away from the other of said body portions and forming said curved surfaces of said lenses, said bubbles being integral with and part of said one of said body portions of said members, the interior surface of each of said bubbles defining a chamber, and each of said chambers being in communication with the space between said body portions of said members;

means for collecting solar radiation including a fluid-transporting heat transfer unit; and

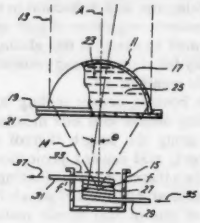
frame means connected to said concentrating means and said collecting means for fixing the position of each of said lenses relative to said heat transfer unit at a distance from said heat transfer unit substantially equal to its focal length so that said focus of each of said lenses is located proximate said heat transfer unit, wherein said first and second members each include a peripheral portion connected to and extending from said body portion for interconnecting said first and second members, said first and second members being an inner and an outer hollow dome, respectively, said bubbles forming said curved surfaces of said lenses being uniformly spaced on said body portion of said outer dome, said inner dome body portion and said outer dome body portion exclusive of said bubbles conforming generally to the shapes of hollow hemispheres, said inner dome body portion being nested within said outer dome body portion.

4,341,204

SOLAR ENERGY COLLECTOR

Dan E. Bloxsom, P.O. Box 36116, Houston, Tex. 77042

Division of Ser. No. 956,220, Oct. 30, 1978, Pat. No. 4,305,383.
This application Jun. 8, 1981, Ser. No. 271,655
Int. Cl.[3] F24J *3/02*; G02B *1/06*
U.S. Cl. 126—440 4 Claims



1. A solar energy collector, comprising:

concentrating means for concentrating solar radiation including a plurality of converging lenses each having a curved surface, an optical axis, a principal focus and a focal length, said concentrating means including a first member and a second member of transparent thermoplastic, said first and second members each having a body portion, said body portions being disposed in nested, spaced apart interrelationship, one of said body portions of said members having a plurality of spaced apart hollow hemispherical bubbles bulging away from the other of said body portions and forming said curved surfaces of said lenses, said bubbles being integral with and part of said one of said body portions of said members, the interior surface of each of said bubbles defining a chamber, and each of said chambers being in communication with the space between said body portions of said members;

collecting means for collecting solar radiation including a fluid-transporting heat transfer unit; and

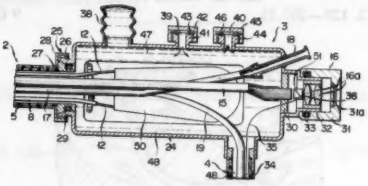
frame means connected to said concentrating means and said collecting means for fixing the position of each of said lenses relative to said heat transfer unit at a distance from said heat transfer unit substantially equal to its focal length so that said focus of each of said lenses is located proximate said heat transfer unit, wherein said first and second members each include a peripheral portion connected to and extending from said body portion for interconnecting said first and second members, said first and second members being an inner and an outer hollow dome, respectively, said bubbles forming said curved surfaces of said lenses being uniformly spaced on said body portion of said outer dome, said inner dome body portion and said outer dome body portion exclusive of said bubbles conforming generally to the shapes of hollow hemispheres, said inner dome body portion being nested within said outer dome body portion, wherein said lenses all have the same focal length and said heat transfer unit includes a coil of tubing convoluted so as to have the shape of a hollow hemisphere disposed under and concentric with said inner dome body portion, said coil being spaced from said lenses a distance substantially equal to said focal length of said lenses.

4,341,205

ENDOSCOPE

Saburo Hosono, Hino, and Yoshihiko Miyamoto, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1981, Ser. No. 222,373
Claims priority, application Japan, Jan. 17, 1980, 55-3800
Int. Cl.[3] A61B *1/06*
U.S. Cl. 128—6 10 Claims



1. An endoscope comprising:
a control section having two ends;
an insertion section which has two ends, one of them being fixed to one end of the control section, and which is further provided with an envelope prepared from a heat-resistant and pressure-resistant material;
an ocular section which is formed at the other end of the control section and sealed from said control section and the atmosphere;
an objective provided in the other end of the insertion section;
a light guide cable which has two ends, one end being connected to the control section, and is provided with an envelope prepared from a heat-resistant and pressure-resistant material;
a connector connected to the other end of the light guide cable;
a cavity defined throughout the control section, the insertion section, the light guide cable and the connector and sealed from the atmosphere;
an image guide which extends through the control section and the insertion section, and has two ends, one end being optically connected to the objective and the other end being optically connected to the ocular section;
a light guide which extends through the cavity and has two ends, one end being disposed in the other end portion of the insertion section and the other end being connected to the connector; and
a protective liquid whose volume little varies with pressure and temperature and is filled in the cavity.

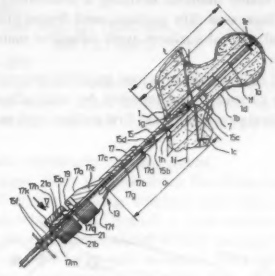
4,341,206

DEVICE FOR PRODUCING A HOLE IN A BONE

T. Robert Perrett, Wayne, Pa.; Franz Sutter, Niederdorf, and Paul Gisin, Waldenburg, both of Switzerland, assignors to Synthes AG, Chur, Switzerland

Filed Dec. 18, 1979, Ser. No. 104,824
Claims priority, application Switzerland, Dec. 19, 1978, 12877/78; Dec. 19, 1978, 12878/78
Int. Cl.[3] A61B *17/18*; A61F *5/04*
U.S. Cl. 128—92 EB 2 Claims

1. A tool for forming a stepped hole of controlled depth in bone for receiving a fracture reducing and stabilizing implant, comprising a twist drill, having a shank, for forming a small diameter cylindrical bore, means for forming a large diameter bore, the shank of said twist drill being slidable through said large diameter bore forming means so as to be axially extendable therefrom, means for adjusting the extent to which the twist drill extends beyond said large diameter bore forming means and a conical section abutting and tapering outwardly from said means for forming a large diameter bore on the side of said means opposite to that from which the twist drill extends, the part of said conical section nearest said large diameter bore forming means having a series of flutes and grooves, said flutes forming cutting means for chamfering the edge of



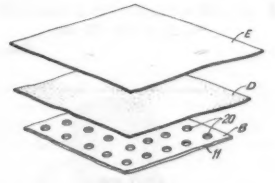
the large diameter bore in the bone, the remainder of said conical section having an outer surface serving as a stop for said tool.

4,341,207

WOUND DRESSING

Peter L. Steer, East Grinstead, and Howard Mathews, Forest Row, both of England, assignors to Kingsdown Medical Consultants Limited, England

Filed Aug. 25, 1980, Ser. No. 180,717
Claims priority, application United Kingdom, Sep. 7, 1979, 7931164; Apr. 21, 1980, 8012994
Int. Cl.[3] A61F *13/00*
U.S. Cl. 128—155 16 Claims



1. A wound dressing comprising a layer of curative and absorbent material which contacts the wound and has a series of apertures therethrough, a layer of air-permeable deodorizing material, and and outer flexible air-permeable layer having an adhesive coating which secures the dressing to the body wherein said layer of curative and absorbent material is a homogeneous mass of from about 30% to about 70% by weight of one or more hydrocolloids selected from the group consisting of pectin, gelatin, karaya gum, guar gum, locust bean gum, and sodium carboxymethylcellulose provided that at least about 20% by weight of said mass is one or more curative hydrocolloids selected from the group consisting of gelatin, pectin and karaya gum and from about 30% to about 70% by weight of a viscous binder selected from the group consisting of natural rubber, silicone rubber, acrylonitrile rubber, polyurethane rubber and polyisobutylenes.

4,341,208

MOISTURE-RETENTIVE COVERING FOR OINTMENT APPLICATION

Marvin Gordon, East Windsor, N.J., assignor to Whitman Medical Corporation, Clark, N.J.

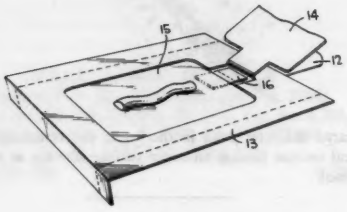
Filed Jul. 14, 1980, Ser. No. 168,723
Int. Cl.[3] A61L *15/00*
U.S. Cl. 128—156 6 Claims

1. A moisture-retentive covering for ointment applied to a

portion of a patient's skin to promote hydration of the covered skin and maximizing percutaneous absorption of the ointment, said covering comprising:

a flexible frame member defining a prescribed area slightly larger than said skin portion, said frame member having first and second surfaces with adhesive material on each surface;

a sheet of moisture-impervious material secured to said first surface of said frame member by said adhesive material and entirely covering said first surface and said prescribed area;



a removable backing secured to said second surface by said adhesive material and entirely covering said second surface, said removable backing being fabricated from a material which, upon removal from said second surface, leaves the adhesive material substantially intact on said second surface; and

at least one tab extending from said sheet beyond said prescribed area defined by said frame for the purpose of permitting a user to grip the tab while removing said backing.

4,341,209

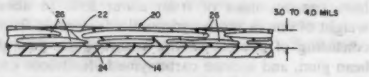
ADHESIVE BANDAGE WITH FOAM BACKING

Charles H. Schaar, Lake Zurich, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Jan. 12, 1981, Ser. No. 224,378

Int. Cl.³ A61L *15/00*

U.S. Cl. 128—156 **4 Claims**



1. A pressure sensitive adhesive bandage having superior smoothness, flexibility, conformability and softness, including

a backing sheet with a glossy, smoothly pebbled, low friction, non-adherent face surface and a coating-adherent rear surface having adhered thereon a coating of pressure sensitive adhesive providing an adhesive rear surface, and

an absorbent pad adhered to a portion of said adhesive rear surface with other portions of said adhesive rear surface being uncovered

said backing sheet comprising

polyethylene foam film of between about 2 to 7 mils thickness with predominently closed cells, an apparent effective density of less than about 1.00 gram per cubic centimeter, and a TAPPI T498 hand of less than a vinyl backing sheet of equivalent thickness.

4,341,210

CUFFED ENDOTRACHEAL TUBE AND METHOD

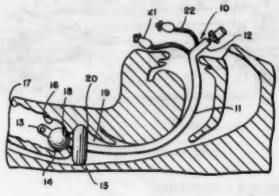
James O. Elam, 6723 S. Euclid Ave., Chicago, Ill. 60649

Continuation of Ser. No. 942,854, Sep. 15, 1978, Pat. No. 4,235,239, which is a continuation-in-part of Ser. No. 800,420, May 25, 1978, abandoned. This application Jun. 30, 1980, Ser. No. 157,735

The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—207.15 **9 Claims**



1. A cuffed endotracheal tube adapted for insertion through the mouth of a patient to provide a passage for artificial respiration comprising:

an elongated flexible air tube having a proximal end portion adapted to be located external to the mouth and a distal end portion adapted to be located within the trachea;

anchoring means located on said tube at two separate points along said tube intermediate said proximal and distal end portions thereof, the lower of said means radially extending from said tube and adapted to contact the area of the trachea around and below the opening defined by the larynx without exerting pressure against the wall of the trachea, the upper of said means extending radially from said tube and adapted to contact the area around and above the opening defined by the larynx while also exerting pressure against the wall of the pharynx;

said elongated flexible air tube being positively anchored by the upper and lower of said means associated with said tube in a position in which the upper of said means provides a seal to prevent leakage of air during artificial respiration while at the same time preventing secretions from travelling into the area of the upper trachea or larynx.

4,341,211

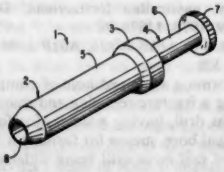
LUBRICATING OBJECT APPLICATOR

Larry H. Kline, 18 Broad St., Suite 805, Charleston, S.C. 29401

Filed Sep. 8, 1981, Ser. No. 300,028

Int. Cl.³ A61M *35/00, 5/00*

U.S. Cl. 128—261 **60 Claims**



1. A device for placing a suppository into a body cavity comprising:

a. an applicator body with a shaft extending from a first open end to a second open end;

b. a compartment surrounding said shaft;

c. a lubricating plunger moveably secured to said applicator

body, sized and shaped to fit within said compartment; and

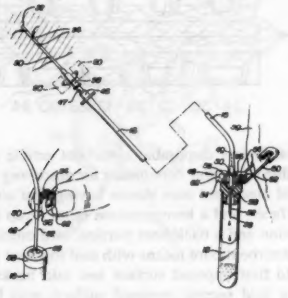
d. a suppository plunger, sized and shaped to fit within said shaft, wherein said suppository plunger may push said suppository from said first open end to and out of said second open end when said device is utilized, whereby when said device is placed within said body cavity, said suppository may be pushed through said second open end into said body cavity.

4,341,212

SEROUS FLUID DRAIN KIT

Albert Medwid, 770 Via Hierba, Santa Barbara, Calif. 93110

Filed Jul. 18, 1980, Ser. No. 170,146
Int. Cl.³ A61M *1/00, 5/00*
U.S. Cl. 128—276 **19 Claims**



19. A drain kit for collection and drainage of serous fluid from a region of accumulated serous fluid in a patient's body, comprising:

a catheter assembly including a hollow flexible cannula having a blunt end with a plurality of perforations formed adjacent said blunt end and a rear end connected to a female coupling member, and a relatively rigid trocar with a pointed end and received slidably within said cannula and said female coupling member, said pointed end of said trocar being insertable into said region of accumulated serous fluid to carry said blunt end of said cannula into said region, said trocar being slidably removable from said cannula and said female coupling member to leave said blunt end of said cannula within said region for collection and passage of the serous fluid out of the patient's body;

an elongated flexible drain tube having a male coupling member carried at one end for reception into said female coupling member for communicating the interior of said drain tube with the interior of said cannula;

a portable vacuum bottle defining a source of vacuum and including a self-sealing resilient cap;

a fitting at the other end of said drain tube and including a hollow piercing element for insertion through said cap for coupling said vacuum to the interior of said tube whereby said vacuum draws the serous fluid from the patient's body into said bottle, said fitting further including at least one foldable wing projecting outwardly and sized to facilitate manual grasping of said fitting for easy insertion of said piercing element through said cap and subsequent removal from said cap when the bottle is filled with the draining fluid, said at least one wing having a hole formed therein; and

a pin receivable through the hole formed in said at least one wing and adapted for connection to clothing worn by the patient to secure said fitting with respect to the patient's body.

4,341,213

BONDED NONWOVEN FABRICS

Lawrence B. Cohen, Sharon, Mass., assignor to The Kendall Co., Boston, Mass.

Filed Aug. 13, 1981, Ser. No. 292,374
Int. Cl.³ A41B *13/02*
U.S. Cl. 128—284 **8 Claims**

1. A nonwoven fabric which comprises an unspun and unwoven array of textile fibers adhesively united to each other along at least certain portions of their length by a combination of

(a) an organic polymeric bonding agent;

(b) an inorganic filler selected from the class consisting of alumina trihydrate, silica, calcium carbonate, and clays having adsorbed water bound to their surfaces or as an element of their structure, said organic polymeric bonding agent being coupled to said inorganic filler by

(c) a coupling agent selected from the class consisting of

(d) organosilanes and organotitanates characterized by having covalently bonded to the silicon or titanium atom at least one organic group capable of hydrolyzing to a hydroxy group in aqueous media, and further characterized by having at least one non-hydrolyzable organic group covalently bonded to said silicon or titanium atoms, and

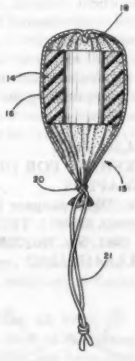
(e) organotitanates in which two valences of the titanium atom are taken up by a non-hydrolyzable chelate linkage.

4,341,214

SLEEVE-ENCLOSED HYDROPHILIC FOAM TAMPON WITH IMPROVED AFTER-USE WITHDRAWAL CHARACTERISTICS

Donald M. Fries, Combined Locks, Wis., and David F. Ring, Morganville, N.J., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jul. 1, 1977, Ser. No. 812,174
Int. Cl.³ A61F *13/20*
U.S. Cl. 128—285 **12 Claims**



1. A catamenial tampon comprised of a resiliently compressible absorbent element enclosed in a sleeve of fluid-permeable material, said element being comprised of an oblong strip of hydrophilic foam curled up in the form of a hollow right cylinder with the ends of said strip juxtaposed and with said ends being free of attachment to each other or to said sleeve, said sleeve being elongate and closed at both ends with said closed end sleeve having a length dimension substantially greater than the length of said cylinder and an inner diameter at least equal to the uncompressed outer diameter of said cylinder, the ratio of said closed sleeve length to said cylinder length being in the range of from 1.5 to about 3 to 1; said cylinder being disposed inside one end of said closed sleeve and said end comprising the insertion end portion of said tampon, the other end of said closed sleeve being unoccupied by

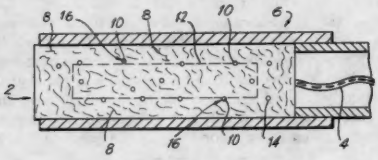
any absorbent material and comprising the withdrawal end portion of said tampon, said withdrawal end portion being gathered to form a tapered structure, and said withdrawal end portion having a withdrawal string secured to the small gathered end of said tapered structure, enabling said tapered withdrawal end portion to interact in wedge-like fashion with the introital opening of the vagina at the time of withdrawal and to ease such withdrawal when pulling force is exerted on said withdrawal string.

4,341,215

ABSORBENT DEVICE

William T. Eldridge, Darien, Conn., assignor to Tampax Incorporated, Lake Success, N.Y.

Filed Sep. 4, 1980, Ser. No. 184,120
Int. Cl.³ A61F *13/20*
U.S. Cl. 128—285 25 Claims



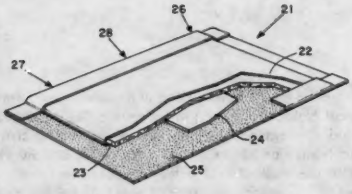
1. A catamenial tampon comprising:
an open-structured mass of absorbent material;
super-absorbent material, including at least one discrete portion thereof;
encapsulating means using an encapsulating material for isolating at least 50% of the super-absorbent material from being wetted by an aqueous liquid, such as water or menses, in one or more of said discrete portions;
each said encapsulated discrete portion being incorporated within said mass of absorbent material; and
said encapsulating material being adapted in the presence of a relative excess of menses, and prior to saturation of said mass of absorbent material, to permit absorption of the excess menses by the super-absorbent material originally contained within such encapsulating means.

4,341,216

BREATHABLE BACKSHEET FOR DISPOSABLE DIAPERS

Mary C. Obenour, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 27, 1981, Ser. No. 239,090
Int. Cl.³ A41B *13/02*
U.S. Cl. 128—287 17 Claims



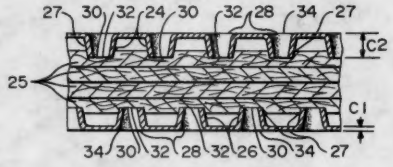
1. A disposable diaper comprising an absorbent core; a vapor pervious, relatively liquid impervious outer sheet; and a liquid impervious inner panel; wherein said inner panel is substantially as wide as said absorbent core and is from about 25% to about 85% of the length of said absorbent core; wherein said inner panel is superimposed on said outer sheet to form a breathable backsheet and said absorbent core is superimposed on said backsheet in such a manner that said inner panel is interposed between said absorbent core and said outer sheet and is located in the crotch region of said diaper.

4,341,217

BARRIERLESS DISPOSABLE ABSORBENT ARTICLE HAVING AN ABSORBENT CORE ENCASED IN A HOMOGENEOUS OUTER WRAP

Susan P. Ferguson, and William F. Landrigan, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 17, 1980, Ser. No. 207,165
Int. Cl.³ A61F *13/16*
U.S. Cl. 128—290 W 9 Claims



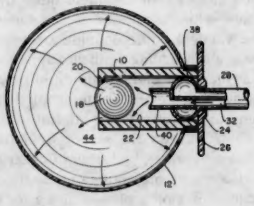
1. A barrierless disposable absorbent article comprising a thin, flexible absorbent core means for absorbing and retaining liquid, said absorbent core means having first and second opposed surfaces; and a homogeneous outer wrap having a topsheet portion and a backsheet portion, said outer wrap encasing said absorbent core means with said topsheet portion overlaying said first opposed surface and said backsheet portion overlaying said second opposed surface, said homogeneous outer wrap having an apparent caliper and having a multiplicity of protuberances projecting inwardly towards said absorbent core means, each of said protuberances having a base and having an apex remote from said base, said base having a base opening and said apex having an apex opening, said outer wrap having a largest apex opening; the ratio of the apparent caliper of said outer wrap to the maximal diagonal of said largest apex opening being at least about 0.35 and the apparent caliper of said homogeneous outer wrap being from about 0.013 inches to about 0.035 inches.

4,341,218

DETACHABLE BALLOON CATHETER

Hoi S. Ü, La Jolla, Calif., assignor to University of California, Berkeley, Calif.

Continuation of Ser. No. 910,310, May 30, 1978, abandoned.
This application Mar. 6, 1980, Ser. No. 147,020
Int. Cl.³ A61M *25/00*
U.S. Cl. 128—325 15 Claims



1. A detachable balloon catheter adapted to be placed in an organic lumen, comprising:
a balloon having a neck portion;
a cylinder secured to the neck portion of said balloon;
a catheter tube;
means mounted on the distal end of said tube for coupling said tube to said cylinder in fluid transfer relation with said

balloon for inflating said balloon through said cylinder, by initially securing said tube end within said cylinder; and

for uncoupling said tube from said cylinder, without any relative movement between said tube and said cylinder or between said tube and said balloon, whereby said tube may be released from said cylinder atraumatically and withdrawn from the lumen without the application of force to said cylinder or to said balloon;

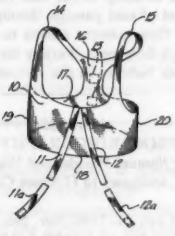
seal means for sealing said cylinder substantially simultaneously with withdrawal of said tube.

4,341,219

SUPPORT BRASSIERE

Lawrence Kuznetz, 2336 Crows Nest La., League City, Tex. 77573

Filed Jul. 23, 1980, Ser. No. 172,226
Int. Cl.³ A41C *3/00*
U.S. Cl. 128—498 **8 Claims**



1. A support brassiere comprising in combination

(a) an anterior breast engaging section conformable to the shape of the breast and being stretchable in the horizontal direction but not substantially stretchable in the vertical direction, connected to each of

(b) a dorsal section and

(c) a shoulder support section which is not substantially stretchable in the vertical direction.

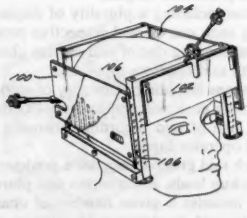
(d) said anterior section having strap means extending downwardly and sidewardly for each breast respectively and having an extended section of sufficient length to be secured at the dorsal section for separating and uplifting the breasts.

4,341,220

STEREOTACTIC SURGERY APPARATUS AND METHOD

John H. Perry, Silver Spring, Md., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 13, 1979, Ser. No. 29,865
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—630 **31 Claims**



1. Stereotactic frame apparatus adapted for use in performing stereotactic surgery with an X-ray CT scanner, said stereotactic frame apparatus comprising:

a stereotactic frame defining a three-dimensional coordinate system which can be fixed with respect to the anatomy of a living patient,

said stereotactic frame including mechanism for positioning a desired surgical device within said anatomy at any desired location defined in terms of said three-dimensional coordinate system, and

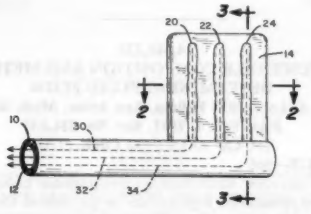
X-ray detectable fiducial marker means associated with said stereotactic frame defining at least three non-collinear points within each planar cross-section therethrough, said marker means including means for determining the three-dimensional coordinates of said three points in each said cross-section whereby a scan in any single plane provides the three-dimensional coordinates of said three noncollinear points.

4,341,221

SHIELDED RECORDING ELECTRODE SYSTEM

Roy L. Testerman, New Hope, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 7, 1980, Ser. No. 195,169
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—642 **14 Claims**



1. A method of detecting electrical activity of a nerve comprising:

wrapping at least one electrode tightly about said nerve;

shielding said at least one electrode from electromagnetic interference by wrapping a flap having a conductive shield about said at least one electrode; and

electrically coupling at least one electrical conductor to said at least one electrode whereby said electrical activity of said nerve may be detected from said at least one electrical conductor.

4,341,222

PATIENT SUPPORT APPARATUS FOR ULTRASOUND MAMMARY SCANNING APPARATUS

Bayard G. Gardineer, Skillman, and James A. Heringes, Dayton, both of N.J., assignors to Technicare Corporation, Solon, Ohio

Filed Mar. 12, 1980, Ser. No. 129,814
The portion of the term of this patent subsequent to Aug. 11, 1998, has been disclaimed.
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **22 Claims**

1. Apparatus for supporting a patient during examination of the patient's breast comprising:

a tank for containing a quantity of fluid transmission medium;

a sonic energy transducer disposed in said tank for transmitting to and receiving sonic energy from the patient;

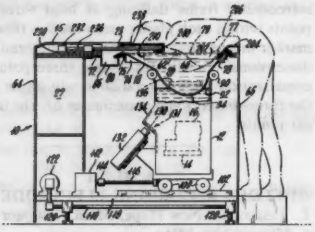
a patient support platform for supporting the patient's upper body over said tank;

said platform having an aperture therethrough for receiving the patient's breast;

readily changeable and disposable flexible bag means having an open end supported adjacent said platform and about said aperture and having a closed end adapted to be draped into engagement with fluid in said tank;

said bag means adapted to contain a quantity of fluid to define a pool of fluid into which the patient's breast may be suspended without contacting said bag during diagnosis;

said bag means adapted to form an interface between fluid in said pool and fluid in said tank;



the transmission properties of said bag means permitting transmission of sonic energy from said transducer therethrough without substantial distortion of said sonic energy.

4,341,223

FLUORESCEABLE COMPOSITION AND METHOD OF DETERMINING FLUID FLOW

Lauralee A. Lutz, 2925 Hilltop, Ann Arbor, Mich. 48104

Filed Feb. 4, 1981, Ser. No. 231,039
Int. Cl.³ A61B 5/00; C09K 11/06
U.S. Cl. 128—666 **13 Claims**

1. An aqueous fluoresceable composition comprising 6, 7-dihydroxycoumarin 6-glucoside in parenteral dosage unit form at a concentration sufficient, when administered to a subject and exposed to ultraviolet light, for visualizing fluorescence in tissue fluid, the composition being adapted for coadministration with fluoresceable parenteral fluorescein and being compatible and non-scavenging with said fluorescein in vivo.

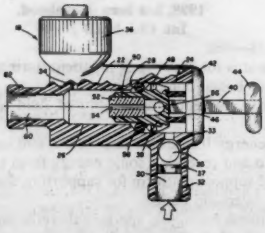
5. A method for determining fluid flow in a subject comprising administering to the subject a fluoresceable composition in parenteral dosage unit form comprising 6, 7-dihydroxycoumarin 6-glucoside, exposing the treated subject to ultraviolet light, and viewing the subject while exposed to determine the presence and distribution of fluorescence.

4,341,224

CATHETER FLUSHING APPARATUS

Jerry D. Stevens, Thousand Oaks, Calif., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Feb. 4, 1980, Ser. No. 118,420
Int. Cl.³ A61B 5/02
U.S. Cl. 128—675 **10 Claims**



1. An improved flow control apparatus for use in liquid flow systems for pressure monitoring of hemodynamics, such systems including a catheter which is continuously flushed in use, said apparatus comprising:

a housing having at least one passage therein, said passage having an inlet and an outlet;

a valve seat defined in said passage;

a valve plunger movably mounted in said passage;

resilient means biasing said plunger into contact with said seat;

capillary means extending at least partially through said plunger for providing a low flow path from said inlet to said outlet when said valve plunger is in contact with said valve seat;

means for selectively moving said valve plunger out of contact with said valve seat to provide a high flow path around said plunger from said inlet to said outlet;

said moving means including an actuator member attached to said plunger and slidably mounted in and extending through a hole extending from said passage to the exterior of said housing so that said plunger may be moved selectively out of contact with said seat by manipulation of said actuator member from externally of said housing; and

a flexible sealing element connected about said actuator member and to said housing about said hole to prevent liquid from leaking out of said passage through said hole; and

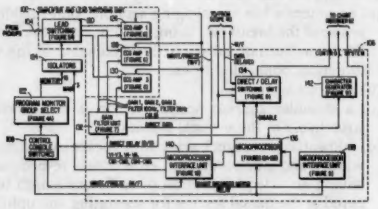
said inlet having flow control means to limit the amount of flow in said high flow path thereby minimizing the possible production of air bubbles in the system.

4,341,225

ELECTROCARDIOGRAPHY SYSTEM

Stuart L. Gallant; Samuel Woods, and Walter E. Palmer, all of Baltimore, Md., assignors to Hittman Corporation, Columbia, Md.

Filed Jul. 31, 1980, Ser. No. 174,271
Int. Cl.³ A61B 5/04
U.S. Cl. 128—710 **43 Claims**



1. An electrocardiography system for displaying, in accordance with an operator input, electrocardiograph (ECG) data provided in a plurality of pickup leads, wherein said pickup leads in said plurality of pickup leads are divided into groups, said system comprising:

selector means responsive to said operator input for selecting a corresponding group of said pickup leads;

processing means for processing said ECG data from said corresponding group of said pickup leads to develop respective processed outputs;

display means including a plurality of display channels for providing each one of said respective processed outputs on a corresponding one of said display channels in accordance with said operator input; and

recording means including a plurality of recording channels for recording each said respective ECG data on a corresponding one of said recording channels in accordance with said operator input;

wherein each said group comprises a predetermined number of said pickup leads, and wherein said plurality of display channels includes a given number of channels, equal in number to said predetermined number of said pickup leads, a spare channel, and operator actuator means for selecting one of said given number of channels and for actuating said spare channel to record thereon said respective ECG data from said selected one of said given number of channels;

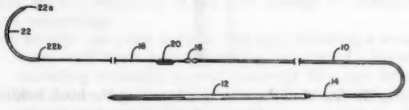
said system including switch means connected between said selector means and said display means, on the one hand, and said recording means, on the other hand, said switch means being responsive to said operator input for making a selection between said respective ECG data from each said pickup lead, said displayed respective ECG data from said display means, and said respective ECG data from said selected one of said given number of said channels as recorded on said spare channel, and for providing said selection to said recording means.

4,341,226

TEMPORARY LEAD WITH INSERTION TOOL

Peter Peters, Brunssum, Netherlands, assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 22, 1980, Ser. No. 189,531
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—784 **5 Claims**



1. A lead for establishing electrical contact between body tissue and a medical device comprising:

a length of conductor having a proximal end and a distal end;

a sheath attached to the surface of said length of conductor;

connector means fixedly attached to said proximal end of said length of conductor for electrically coupling said lead to said medical device;

an electrode fixedly attached to said distal end of said length of conductors;

a length of surgical thread having a proximal end and a distal end wherein said proximal end of said length of surgical thread is fixedly attached to said electrode;

a needle fixedly attached to said distal end of said length of surgical thread; and

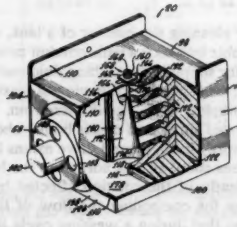
means fixedly attached to said length of surgical thread for frictionally resisting the movement of said surgical thread relative to said body tissue.

4,341,227

SYSTEM FOR IRRADIATING LIVING TISSUE OR SIMULATIONS THEREOF

Paul F. Turner, North Salt Lake, Utah, assignor to BSD Corporation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 2,583, Jan. 11, 1979, abandoned. This application Jun. 14, 1979, Ser. No. 48,515
Int. Cl.³ A61N *1/40*
U.S. Cl. 128—804 **14 Claims**



1. An applicator for irradiating electromagnetic energy into living tissue, or simulations thereof for causing hyperthermia therein, comprising:

(a) a waveguide-type transmission line having electrically conductive top, bottom and side walls, and a radiation emitting face and an opposite rearward face;

(b) dielectric means disposed in the transmission line for enabling the transmission line to have a characteristic impedance, when radiating electromagnetic energy into the tissue, or simulations thereof, within a preselected frequency range having a preselected bandwidth ratio, approximately matching an average characteristic impedance of the living tissue, or simulations thereof, in said preselected frequency range, said dielectric means including a portion extending rearwardly from said radiation emitting face towards said rearward face and for a distance, L, which is less than length of said transmission line; and,

(c) coupling means configured for receiving said electromagnetic energy from a conductor connected to a radiation source and for launching the electromagnetic energy into the transmission line for irradiation thereby into tissue or simulations thereof;

said coupling means including a radiation energy coupler disposed through one of said transmission line walls into said portion at an axial position adjacent a rearward end thereof.

4,341,228

METHOD FOR EMPLOYING TOBACCO DUST IN A PAPER-MAKING TYPE PREPARATION OF RECONSTITUTED TOBACCO AND THE SMOKING MATERIAL PRODUCED THEREBY

Gus D. Keritsis, and David A. Lowitz, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jan. 7, 1981, Ser. No. 223,035
Int. Cl.³ A24B *3/14*
U.S. Cl. 131—354 **35 Claims**

1. A method for employing tobacco dust in the preparation of reconstituted tobacco which comprises:

(a) admixing tobacco dust with a bonding material to form a mixture;

(b) treating the mixture to form water resistant agglomerated particles;

(c) admixing the agglomerated particles with a tobacco-parts slurry; and

(d) forming the slurry into a sheet by means of a paper-making process, drying and then shredding the resultant reconstituted tobacco sheet.

4,341,229

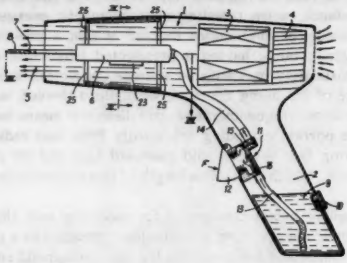
METHOD AND APPARATUS FOR SETTING HAIR

Daniel Bauer, Le Raincy; Jules Leroy, Blanc Mesnil, and Jean-Paul Beck, Paris, all of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 584,980, Jun. 8, 1975, Pat. No. 4,166,473. This application Oct. 16, 1978, Ser. No. 951,458
The portion of the term of this patent subsequent to Sep. 4, 1996, has been disclaimed.
Int. Cl.³ A45D *7/00*
U.S. Cl. 132—7 **5 Claims**

1. A process for setting hair which comprises the steps of subjecting at least partially dry hair wound on a tubular member to the action of steam at a temperature between 110° and

150° C. for a period of 1 to 60 seconds, without substantially otherwise heating the hair, and unwinding the hair from the



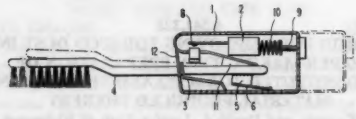
member only after the hair is cooled to about ambient temperature.

4,341,230

SOUND-PRODUCING TOOTHBRUSH ASSEMBLY

Joseph Siahou, 14, rue Pascal, 13007 Marseille, France

Filed Oct. 24, 1980, Ser. No. 200,266
Claims priority, application France, Oct. 31, 1979, 79 27399
Int. Cl.³ A45D *44/18*
U.S. Cl. 132—84 B **9 Claims**



1. A sound-generating toothbrush container adapted for holding a toothbrush during toothbrushing to encourage and increase the efficiency of toothbrushing as well as to direct the functional senses for cleaning from top to bottom with translational pressure and for bringing a desired psychological effect, said toothbrush container comprising:

(a) a sound producing system; and

(b) means for receiving a toothbrush or like instrument therein during use, said means for receiving said toothbrush being adapted to pressure said toothbrush in response to pressure exerted by said toothbrush during brushing whereby sound is produced upon application to the teeth of said toothbrush and stops upon removal of the toothbrush from the teeth.

4,341,231

COSMETIC APPLICATOR AND ASSOCIATED METHOD

Allan Costa, 131 Beverly Rd., Huntington, N.Y. 11746

Filed Jun. 5, 1980, Ser. No. 156,652
Int. Cl.² A45D *40/30*
U.S. Cl. 132—88.5 **13 Claims**

1. In an applicator for a liquid such as mascara, eyebrow lotion or the like comprising a handle, a stem attached to the handle and applicator means on said stem, the improvement wherein said applicator means comprises a flexible tape element formed as an annulus secured to said stem and including a plurality of filaments projecting from said tape element, said filaments being of hook shape and oriented randomly on said tape element, said flexible tape element surrounding said stem such that said filaments project substantially radially from said stem substantially entirely therearound, said filaments having opposite ends, one of said ends being secured to said tape element, the other end of the filament being shaped as a hook to form the hook shape for the filament, said hook being dimensioned and proportioned to constitute a means for holding a droplet of liquid by surface tension of the liquid and for

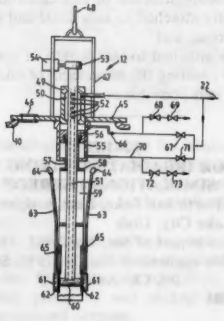
applying the liquid to the hair by contacting the hook holding the liquid droplet to said hair to break the surface tension.

4,341,232

TANK CLEANING APPARATUS

Maurice E. G. Maton, Sherfield English, England, assignor to Beaumont (U.K.) Limited, Hampshire, England

Filed Oct. 1, 1980, Ser. No. 192,848
Claims priority, application United Kingdom, Oct. 3, 1979, 7934281
Int. Cl.³ B08B *9/08*
U.S. Cl. 134—107 **12 Claims**



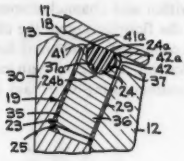
1. Apparatus for cleaning the interior of a tank, comprising a spray head insertable into such a tank, conduit means coupled to said spray head for supplying a washing fluid under pressure to said spray head, said spray head having at least one spray arm means for spraying such liquid therefrom, first drive means for rotating said spray arm means bodily about a longitudinal axis of the spray head, second drive means for rotating said spray arm means about an axis normal to the longitudinal axis and independently of the rotation effected by said first drive means, means for controlling the flow of fluid to said spray arm means so that during a washing cycle liquid flows from said spray arm means during only substantially 180° of rotation of said spray arm about the axis normal to the longitudinal axis from a substantially vertical position of said spray arm means and whilst said spray arm means is rotated through a plurality of rotations about the longitudinal axis.

4,341,233

FIRE SAFE SEAT FOR A ROTARY VALVE

William W. Broadway, Houston, Tex., assignor to FMC Corporation, Chicago, Ill.

Filed Jun. 27, 1980, Ser. No. 163,657
Int. Cl.[3] F16K *13/04*
U.S. Cl. 137—72 7 Claims



1. A fire-safe seat assembly for a rotary valve having an annular valve body defining a flow passage and a movable valve element supported in the flow passage for controlling flow, comprising:

an annular one-piece metallic seat ring including a radially outer rigid body portion merging into radially inwardly extending arcuately curved relatively thin lips defining therebetween an annular groove, each of said lips having a constant cross-section,

an annular resilient seal member disposed between said lips and substantially filling said groove, to extend normally radially inwardly of said seat ring,

said lips converging toward each other with a curved configuration to terminate at their radially innermost extremities thereby to retain said seal member in said groove, and,

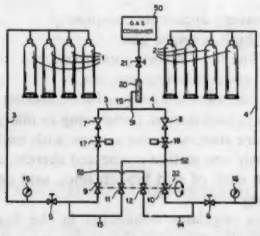
said lips having a spring-like character for respectively flexing at their said innermost extremities and positioned to be engaged by the valve element as said resilient seal member is deformed, thereby to enhance sealing engagement with the valve elements by spring pressure of said metal lips thereagainst on either side of said resilient seal member.

4,341,234

METHOD AND APPARATUS FOR EMPTYING VESSELS

Helmut Meinass, Wolfratshausen, and Bernhard Volz, Munich, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Oct. 7, 1980, Ser. No. 194,898
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1979, 2940755; Jun. 27, 1980, 3024251
Int. Cl.[3] F17D *1/02*; G05D *7/01*
U.S. Cl. 137—110 4 Claims



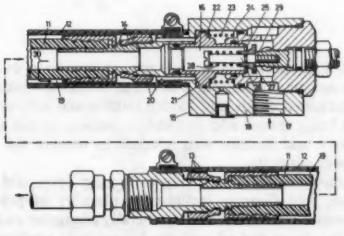
1. A gas supply apparatus comprising first and second acetylene-delivering gas supply means for expanding acetylene gas and supplying same to an acetylene-gas consumer, each of said gas supply means including a respective group of tanks containing said gas under pressure, each group of tanks being provided with a respective withdrawal line, each of said withdrawal lines being provided in succession with a cut-off valve, a switch-over valve and an automatic pressure controller before said lines join to feed said consumer, a respective connecting duct communicating with each line between the cut-off valve and switch-over valve thereof and opening into the other of said lines between the switch-over valve and the pressure controller thereof, each of said ducts being provided with a respective switch-over valve, and control means including said controllers for initially drawing gas from said first gas supply means and upon partial emptying of said first gas supply means continuing to withdraw gas therefrom and to feed said consumer therewith in a preference stream, and for mixing said preference stream with gas drawn from said second gas supply means with progressive increase in the rate of flow of gas from said second gas supply means upon decrease in the rate of flow from said first gas supply means, the gas from said second gas supply means forming a complementary gas stream, said control means responding to comparison of the pressures of said preference and complementary streams with first and second set point values, each first set point value corresponding to a higher pressure level than the respective second set point value, the pressure controller of the line through which the preference stream is drawn having a horizontal or increasing characteristic curve while the pressure controller of the line through which said complementary stream is drawn having a horizontal or decreasing characteristic curve so that at a constant volumetric flow rate with a decreasing tank pressure, the pressure of the respective gas after expansion remains constant or increases over a broad pressure range for the preference stream and remains constant or decreases over a broad pressure range from the complementary stream.

4,341,235

DEVICE FOR CONNECTING A PRESSURE FLUID SOURCE TO A FLUID MOTOR

Rune Nord, Vasa, Finland, assignor to Torbjörn Nord, Stockton, Calif.

Filed Oct. 31, 1980, Ser. No. 202,651
Claims priority, application Sweden, Oct. 31, 1979, 7909030
Int. Cl.[3] F16K *17/40*, *31/122*
U.S. Cl. 137—312 4 Claims



1. A device for connecting a pressure fluid source to a fluid motor, comprising:

(a) an inner conduit;

(b) first connector means attached to one end of said inner conduit for connecting said inner conduit to the fluid motor;

(c) an outer conduit surrounding said inner conduit and defining a sealed space around said inner conduit; and

(d) a safety shut-off valve attached to said inner and outer conduits and having second connector means for being connected to the pressure fluid source, said safety shut-off means including

(1) means defining a flow-through passage communicating with said second connector means and with the other end of said inner conduit,

(2) means defining a sealed compartment in said valve,

(3) means defining a fluid flow passage between said sealed space and said sealed compartment,

(4) a pair of valve elements disposed in said flow-through passage and coacting as valve seat and valve body and independently relatively movable toward one another to a closed position in sealing engagement to block fluid flow through said passage, and away from one another to an open disengaged position to permit fluid flow through said passage,

(5) means biasing each of said valve elements toward said open position,

(6) one of said valve elements constituting a movable wall of said sealed compartment and being displaceable against its bias toward said closed position by elevated pressure in said sealed space and said sealed compartment, said elevated pressure being a build-up of fluid pressure produced by fluid leaking from said fluid flow passage through said inner conduit, and

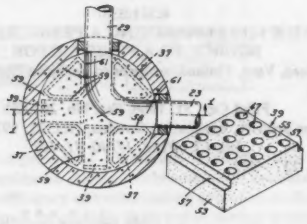
(7) the other of said valve elements being displaceable against its bias toward said closed position by fluid forces imposed on it by a liquid stream passing through said flow-through passage from said second connector means at a flow rate at least equal to a given maximum permissible flow rate.

4,341,236

SEWER MANHOLE CHANNEL CONSTRUCTION AND METHOD

Gary F. LaBenz, 13027 Dixie Hwy., Holly, Mich. 48442

Filed Mar. 11, 1980, Ser. No. 129,362
Int. Cl.³ F16L 5/00; E04B 2/00
U.S. Cl. 137—363 **16 Claims**



1. In a sewer manhole construction having a cylindrical bottom section adapted for placement within the ground at a pre-determined depth, and having bottom and side walls;

there being spaced inlet and outlet openings in said side wall above said bottom wall adapted to receive the ends of sewer conduits;

the improvement comprising a flooring upon said bottom wall, said flooring including a plurality of pre-formed channel elements of either generally triangular and rectangular shape and of uniform height, said preformed elements being made from a light weight foam plastic material and being mounted upon and around said bottom wall adjacent said side wall, one inner wall of each element registering with the inner walls of adjacent elements and spaced from the inner wall of opposed elements to generally define a first channel underlying and interconnecting said inlet and outlet openings;

each generally triangular channel element having a base portion and a top portion inset along its sides from the sides of the base portion to define a continuous ledge around said generally triangular channel element between said base and top portions, the corners of the base and top portions being truncated, each rectangular channel element having a base portion and a top portion, opposite ends of the rectangular channel element top portion being inset from the corresponding ends of the rectangular channel element base portion defining a ledge at opposite ends of said rectangular channel element between its base and top portions;

each channel element having a plurality of upright apertures extending therethrough;

and a layer of concrete filling all of said apertures and the interstices between the channel elements and between the channel elements and side wall, partly filling said first channel and overlying said channel elements providing a flooring above the channel elements, the concrete filling the channel element apertures defining a series of concrete columns within said channel elements and terminating in the top of the flooring above the channel elements;

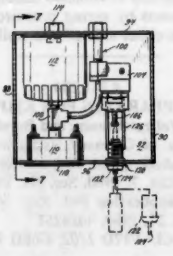
there being a concave floor channel formed in the top of said concrete flooring in registry with said first channel and at its ends communicating with said inlet and outlet openings.

4,341,237

APPARATUS AND METHOD FOR REDUCING THE WASTE OF WELDING GAS

Howard V. Stauffer, Sioux City, Iowa, assignor to Valmont Industries, Inc., Valley, Nebr.

Continuation-in-part of Ser. No. 130,706, Mar. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 909,448, May 25, 1978, abandoned. This application Nov. 24, 1980, Ser. No. 209,536
Int. Cl.³ F16K 1/00, 37/00
U.S. Cl. 137—382.5 **11 Claims**



2. A gas delivery apparatus comprising,

a source of high pressure gas,

a main gas line for delivering gas from said source,

at least one gas consuming stations,

for each station a branch gas line for delivering gas from said main line to said station, there being as many branch lines as there are stations in the system with each branch line having only one station connected therein, and

a control in each of said branch lines, said control further comprising,

a pressure regulator connected in the branch line for substantially reducing the pressure of the gas at the output of the regulator, and

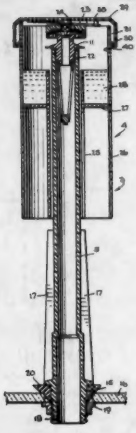
a surge tank means in fluid communication with the output of the pressure regulator and an with said only one station,

whereby the flow of gas delivered from said control to said station at said reduced pressure is greater during the transient period immediately upon operating the station, than during steady state operating conditions.

4,341,238
FLUSHING MEANS

Vernon D. Roosa, 184 Wood Pond Rd., West Hartford, Conn. 06107, and Peter V. Roosa, 253 Fairview Ave., Hamden, Conn. 06514

Continuation-in-part of Ser. No. 801,088, May 27, 1977. This application Jun. 3, 1981, Ser. No. 269,537
Int. Cl.³ F16K *31/18, 33/00*
U.S. Cl. 137—414 7 Claims



1. An improved fluid inlet means for a flushing tank comprising the combination of:

an inlet fitting adapted for being coupled to a source of fluid under pressure and for being mounted within the tank;

a float movably mounted on said inlet fitting for movement between raised and lowered positions responsive to the level of liquid in the bank;

an inlet valve with a cavity positioned on said inlet fitting, said inlet valve having an inlet part and two outlet parts serving said cavity;

a first valve shut-off means including a ball and a ball seat in said inlet valve cavity at one outlet part;

means operatively coupling said float to said first ball for moving said ball from a closed position on said seat to an opened position against the pressure of fluid in said inlet fitting cavity;

a second shut-off means at said other outlet part comprising a flexible diaphragm a fluid passing aperture and being movable between open position and a closed position sealing said other outlet part by fluid pressure in said inlet valve cavity in response to the closed position of said ball; and

a post member positioned in said inlet valve cavity including a support for said ball at its open position and a guide surface for fluid aperture in said flexible diaphragm.

4,341,239
COMBINATION CHECK-OVERPRESSURE RELIEF VALVE

Gordon E. Atkinson, Yellow Springs, Ohio, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio

Filed Jul. 14, 1980, Ser. No. 168,981
Int. Cl.³ F16K *17/18*
U.S. Cl. 137—493 9 Claims

1. A combination check-overpressure relief valve comprising:

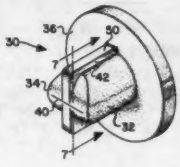
a substantially cylindrical main body portion having a central longitudinal axis and defining a flow path through said valve,

said cylindrical main body portion terminating at one end thereof in a lip portion,

said lip portion having a curved contour about an axis of curvature extending substantially perpendicularly to said flow path, said contour being in a cross section contained within a first plane parallel to said central axis,

said lip portion having a squared-off contour in a second cross section contained within a second plane being parallel to said central axis and not parallel to said first plane,

at least one normally closed slit formed along said squared-off contour, and

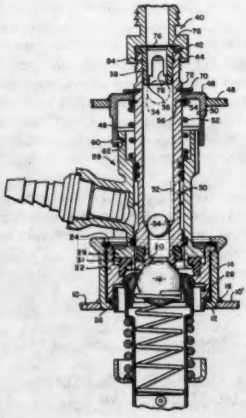


said main body and lip portions being formed of an elastomeric material which allows flow through said slit in a first direction at pressures in excess of a first pressure, checks flow through said slit in a second direction opposite to said first direction at pressures below a second pressure, permits relif flow through said slit in said second direction, and resets said slit to its normally closed position when flow pressure in said second direction drops to a value below said second pressure.

4,341,240
BEER TAP CONSTRUCTION

Vincent J. Cerrato, Pomona, N.Y., assignor to Vending Components, Inc., Hackensack, N.J.

Filed Feb. 4, 1980, Ser. No. 118,203
Int. Cl.³ F16K *15/04*
U.S. Cl. 137—533 5 Claims



1. An outlet fitting for a beer keg or the like including in combination a sleeve having a passage with a discharge end through which the beer is discharged from the keg, a check-valve element in the sleeve, a seat in the sleeve against which the check valve closes to prevent back flow of beer through the fitting toward the keg, a retainer bushing flanged at one end and having its other end received in the sleeve passage at the discharge end of the sleeve, the extent of such reception being to the point of flange abutment with said discharge end

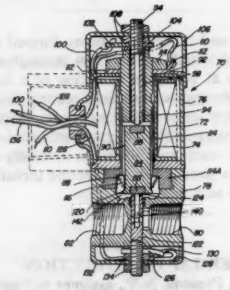
of the sleeve, the part of the bushing which extends into the sleeve having a passage for the flow of beer from the keg, and the bushing having protuberances at its said other end, said protuberances having interference abutment with the check-valve member to effectively prevent the check-valve member from entry into the other end of the bushing, and a tubular sleeve-discharge fitting having a counterbore sized and configurated for removable circumferential overlap and threaded engagement with the outer surface of the discharge end of the sleeve, the counterbore of said sleeve-discharge fitting being characterized by an annular flange-engaging bottom wall in radial overlap with the end of the sleeve.

4,341,241

POSITION INDICATING VALVE MEANS

Joseph W. Baker, Branchburg Township, Somerset County, N.J., assignor to Brunswick Corporation, Skokie, Ill.

Filed Oct. 20, 1980, Ser. No. 198,365
Int. Cl.³ F16K *37/00*
U.S. Cl. 137—554 **20 Claims**



1. A position indicating valve, comprising:
a housing;
a movable member reciprocally mounted in said housing;
engageable valve seal means and valve stop means, one of said means being on said housing and the other said means being on said movable member for relative movement into and out of engagement between closed and open positions;
said valve seal means and said valve stop means being fabricated of electrically conductive material to define engageable electrical contact means, and one of said valve seal means and said valve stop means being fabricated of a conductive elastomer material to insure complete valve closing; and
circuit means coupled to each said valve seal means and said valve stop means whereby said circuit means is closed when said valve seal means and said valve stop means are in contact with each other.

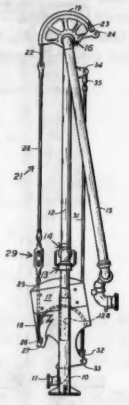
4,341,242

LOADING ARM

Dean E. Hermanson, Richardson, Tex., assignor to Continental Emsco Company, Dallas, Tex.

Filed Nov. 3, 1980, Ser. No. 203,408
Int. Cl.³ B65B *3/04*
U.S. Cl. 137—615 **5 Claims**

1. A loading arm comprising,
a riser,
an inboard arm supported on the riser and including means allowing rotation about first horizontal and vertical axes,
an outboard arm supported on the inboard arm and including means allowing rotation about a second horizontal axis,
a counterweight rotatably mounted on the inboard arm for counterbalancing the inboard and outboard arms,
a first half sheave mounted on the counterweight with its center of rotation coaxial with the center of rotation of the counterweight,
a second half sheave mounted on the outboard arm with its center of rotation coaxial with the second horizontal axis of rotation of the outboard arm,
said first and second sheaves of equal size,
first means including cables trained over one side of said first and second sheaves connecting the counterweight to the outboard arm, and



second means pivoted to and interconnecting the counterweight and said outboard arm and including a pair of respective pivot points,
said pivot points spaced equal distances from the respective centers of rotation of said counterweight and outboard arm and at equal distances from the centerline of said inboard arm in all positions of said outboard arm, said centerlines of said outboard arm and counterweight being parallel,
said centerlines of said counterweight and said outboard arm extending through their axes of rotation.

4,341,243

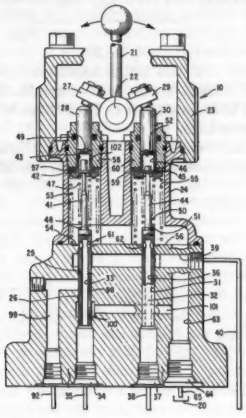
PRESSURE REDUCING VALVE WITH FLOATING STEM FOR MAKE-UP VENT

Kurt B. Melocik, Mazon, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00765, § 371 Date Jun. 16, 1980, § 102(e) Date Jun. 16, 1980, PCT Pub. No. WO81/03686, PCT Pub. Date Dec. 24, 1981
PCT Filed Jun. 16, 1980, Ser. No. 245,223
Int. Cl.³ F15B *13/042*
U.S. Cl. 137—625.68 **9 Claims**

1. A pressure regulating valve (10) having wall means (24) defining a valve chamber (25) provided with an inlet (39), an exhaust passage (101,63,64), and an outlet (34), a movable valve member (26) in said chamber (25), and regulating means (61,39,47) associated with said valve chamber and said movable valve member to provide pressure regulation of fluid passing from said inlet (39) through said valve chamber (25) to said outlet (34), said regulating means being further arranged to limit movement of said valve member (26) to a first preselected position in response to pressurized fluid in said outlet (34), the improvement comprising:
means (102,49,28) selectively directly mechanically connected with said movable valve member (26) for moving the movable valve member beyond said first position to a second preselected position;
means defining a second inlet (99);
means (99,98,100) operable when said valve member (26) is disposed in said second preselected position for providing

a flow passage from said second inlet through said pressure regulating valve (10) to said exhaust passage, said regulating means (61,39,47) including a connector (42) slidably connected to said valve member (26), and a spring (47) positioned between the connector and said valve member, and said mechanical means (102,49,28) including



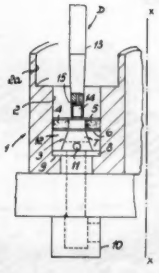
an end portion (102) on said valve member, a manual input element (28) in engagement with said connector and having a contact surface (49) spaced from said end portion (102) of the valve member at the first position of the valve member and in contact with said end portion at the second position.

4,341,244

METERING DEVICE PARTICULARLY FOR CAPSULE-FILLING MACHINES

Libero Facchini, Bologna, Italy, assignor to Farmatic S.N.C., Bologna, Italy

Filed Nov. 6, 1979, Ser. No. 91,849
Claims priority, application Italy, Nov. 9, 1978, 84948 A/78
Int. Cl.³ B65B *1/04*
U.S. Cl. 141—18 **1 Claim**



1. In a capsule-filling machine having a bowl adapted to receive a quantity of pulverulent material to be introduced into capsules, and a volumetric metering member in the form of a vertically displaceable plunger having a metering cavity at its lower end and adapted to be lowered into said bowl to pick up a quantity of said material, the improvement wherein said bowl comprises:

an upwardly open vessel rotatable about a vertical axis and formed with an annular cylindrical chamber opening upwardly and extending to the bottom of said chamber;

a removable insert replaceably received in said chamber and forming a fluid-permeable floor for said bowl impermeable to said material therein, said insert including:

an upper perforated metal plate defining said floor,

a lower perforated metal plate spaced below said upper plate,

a fluid-permeable filling between said plates, and

a support extending to said bottom of said chamber and carrying said plates and said filling while maintaining an annular fluid-distributing compartment in said chamber communicating with said filling and the perforations in said plates; and

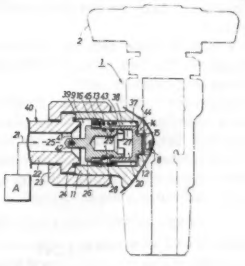
means for connecting said compartment with a suction source.

4,341,245

GAS INLET ATTACHMENT FOR A GAS CHARGER

Norio Daicho, Amagasaki, and Keitaro Yonezawa, Kobeshi, both of Japan, assignors to Kabushiki Kaisha Neriki, Hyogoken, Japan

Filed Apr. 3, 1980, Ser. No. 136,495
Claims priority, application Japan, Apr. 6, 1979, 54-46147[U]
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—18 **6 Claims**



1. In a gas-inlet attachment for use in the mouthpiece of a gas charger, which is detachably connected to the cock of a gas container when the container is charged with a fresh supply of gas, the improvement of said gas-inlet attachment comprising:

said cock including a spring-closed check valve having a recess which opens toward said gas charger;

said check valve having at least one axial passage along its outer periphery to allow the passage of gas therethrough;

said mouthpiece of said gas charger including a pressure differentiator opposed to said check valve;

said pressure differentiator including an axially movable member air-tightly connectable to but movable relative to said check valve with a pressure differentiating space interposed therebetween, whereby to cause opening of said check valve by a pressure difference; and

said mouthpiece of said gas charger including a sealing means for enabling the same to be air-tightly connected to said cock.

4,341,246

LOG-SPLITTING ATTACHMENT DEVICE

James O. Salladay, P.O. Box 224, Fairmount, Ill. 61841

Filed Oct. 10, 1980, Ser. No. 196,060
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A **1 Claim**

1. In a log-splitting attachment device that is adapted to be connected to an apparatus having a hydraulically-powered cylinder-piston combination, after removal of the work piece element normally moved by said cylinder-piston combination,

to provide a reciprocating log-splitting machine, the improvement comprising:

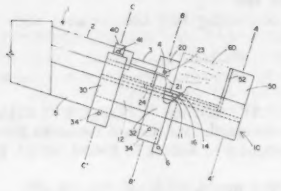
(a) a plunger block means adapted to be removeably connected to the forward free end of said piston, said plunger means including laterally extending flange means,

(b) a frame means including:

(1) a base plate element upon the upper surface of which a log to be split may be placed,

(2) side plate elements positioned essentially vertically on each side of said base plate element for retaining a log to be split against lateral movement,

(3) slot means provided above and adjacent said base plate element, said slot means being adapted to slideably



receive said flange means of said plunger means, to thereby guide and retain said plunger means adjacent said base plate element during the reciprocation of said piston,

(4) a cutting blade element positioned vertically on and adjacent the end of said base plate element removed from said cylinder, and

(5) means for connecting said frame means removeably to said cylinder, whereby a log placed on said base plate element between said plunger means and said cutting blade element is split upon extension of said piston from said cylinder by forcing said log against and sufficiently past said cutting blade element.

4,341,247

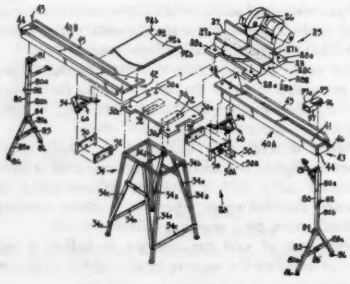
EXTENSION TABLE ASSEMBLY FOR POWER TOOLS

T. David Price, 648 Turin St. S., St. Paul, Minn. 55075

Filed Jun. 6, 1980, Ser. No. 157,077

Int. Cl.³ B27C *9/02*; B27B *25/10*

U.S. Cl. 144—287 **40 Claims**



1. An improved coupler apparatus for securing an elongate extension to a power tool assembly, comprising:

(a) a first coupler member configured for fixed engagement to a power tool assembly having a primary table portion;

(b) a second coupler member configured for fixed engagement to an elongate extension; said first and second coupler members having cooperatively mating engagement members for loosely securing said extension in general alignment with said primary table portion; and

(c) tightening means cooperatively mounted to said first and said second coupler members for rapidly applying alignment pressure directed through a single point between said first and said second members, causing said coupler members to rigidly secure said extension to said power tool assembly and to simultaneously align said extension with said primary table about three orthogonal axes; whereby the upper workpiece supporting surfaces of said extension and said primary table portion are longitudinally, laterally and vertically aligned with one another.

4,341,248

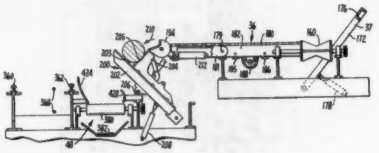
PORTABLE SAWMILL

Kenneth G. Critchell, Dover, and James M. Brown, Jr., Sand Point, both of Id., assignors to Pack River Management Company, Hayden Lake, Id.

Division of Ser. No. 969,645, Dec. 14, 1978, abandoned. This application Feb. 4, 1981, Ser. No. 231,541

Int. Cl.³ B27B *1/00, 29/08*

U.S. Cl. 144—378 **2 Claims**



1. A method of producing lumber from a supply of generally round logs which have bent ends, comprising the steps of:

dropping a log on a set works so that the bent ends of the log point downwardly;

dogging the log with its bent ends pointed downwardly;

then rotating the set works through a pre-selected arc of approximately 45° to incline the bent ends of the log from the vertical; and

thereafter sawing the log into lumber.

4,341,249

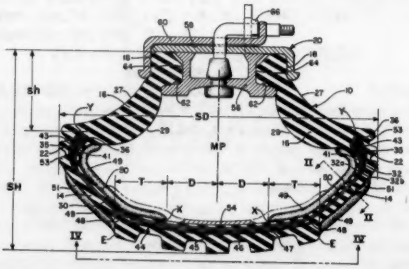
COMPRESSION SIDEWALL TIRE REINFORCED FOR DEFLATED OPERATION

Thomas N. H. Welter, Keispelt, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 99,693, Dec. 3, 1979, abandoned. This application Aug. 6, 1981, Ser. No. 290,534

Int. Cl.³ B60C *17/00, 13/00*

U.S. Cl. 152—330 RF **8 Claims**



1. A pneumatic compression sidewall tire suitable for operating in an inflated or a deflated condition, comprising an annular body of elastomeric material, a circumferentially extending ground-engageable tread portion at the outer periphery of said body, a shoulder portion extending from each axially outer extremity of said tread portion and axially outward and radi-

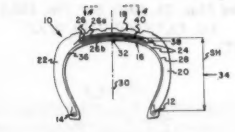
ally inward from said outer extremity, a pair of spaced-apart mounting portions for mounting on a rim, a sidewall extending axially and radially outward from each mounting portion, a pair of junction portions respectively connecting the shoulder portions and sidewalls, the maximum section width of the tire being at the junction portions when the tire is under normal inflation pressure and load, the thickness of said shoulder portions being less than that of the sidewalls, a ply of reinforcing cords extending circumferentially around the tire and extending from each junction portion through a respective shoulder portion and at least to a point radially inward of the tread portion, means to maintain the shoulder portions out of engagement with the ground when the tire is deflated and under normal load, said means including a plurality of circumferentially spaced ribs on the interior and exterior surfaces of each shoulder portion, each rib being disposed at an angle of from 0 to 10 degrees relative to a radial plane of said tire passing through the rib, the ribs on the interior surface of each shoulder portion extending from the respective junction portion to a point axially inward of the respective axially outer edge of the tread, the ribs on the exterior surface of each shoulder portion extending from the respective junction portion to the respective axially outer edge of the tread, the ribs on the interior and exterior surfaces of each shoulder portion being congruently spaced whereby each shoulder portion has a minimum thickness which is equal to the thickness of the shoulder portion without any ribs formed thereon and has a maximum thickness which is equal to said minimum thickness plus the maximum thickness of a rib on the interior surface of the shoulder portion and the maximum thickness of a rib on the exterior surface of the shoulder portion.

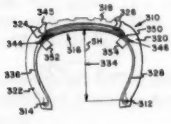
4,341,250

SPLIT CARCASS TIRE

Thomas N. H. Welter, Luxembourg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 29, 1981, Ser. No. 229,685
Int. Cl.³ B60C *9/04, 9/20*
U.S. Cl. 152—354 R **18 Claims**





1. A directional tire having a rotational axis and comprising a first and a second bead, a crown portion, first and second sidewall portions extending respectively from opposite edges of the crown portion to the first and second beads respectively, a belt structure in the crown portion, and a carcass including a first reinforcing ply anchored to and extending from the first bead through the first sidewall portion and into the crown portion past the mid-circumferential plane of the tire and terminating radially outwardly of the mid-section height of the tire, said carcass further including a second reinforcing ply anchored to and exending from the second bead through the second sidewall portion and into the crown portion between said first ply and said belt structure and past the mid-circumferential plane of the tire to partially overlap said first ply, said second ply further extending beyond said belt structure to a location disposed radially outwardly of the mid-section height of the tire at which location said second ply is redirected 180 degrees, the redirected portion of said second ply is disposed radially outwardly of and in at least partial overlapping relation with said belt structure.

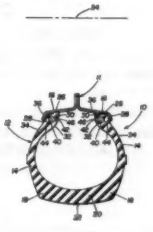
10. A directional tire having a rotational axis and comprising a first and second bead, a crown portion , first and second sidewall portions extending respectively, a belt structure in the crown portion, and a carcass including a first reinforcing ply extending from the first bead through the first sidewall portion and into the crown portion past the midcircumferential plane of the tire and terminating radially outwardly of the mid-section height of the tire, said carcass further including a second reinforcing ply extending from the second bead through the second sidewall portion and into the crown portion between said first ply and said belt structure and past the mid-circumferential plane of the tire to partially overlap said first ply, said second ply further extending beyond said belt structure and into said first sidewall portion a distance equal to at least one-tenth and not more than one-half of the section height of the tire to a location disposed radially outwardly of the mid-section height of the tire at which location said second ply is redirected 180 degrees.

4,341,251

TIRE AND METHOD OF MAKING

Heinz W. Beneze, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Feb. 11, 1981, Ser. No. 233,424
Int. Cl.³ B60C *15/00, 1/00*
U.S. Cl. 152—357 A **15 Claims**



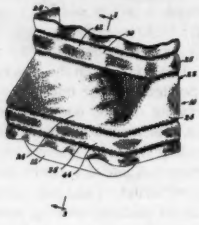
1. In a pneumatic tire comprising a molded or cast seamless toroidal body extending continuously from one annular bead portion to the other, encompassing sidewalls and at least a crown area radially inward of an annular road-engaging tread, said sidewalls connecting the lateral edges of said tread to said bead portions, each bead portion containing an independent unitary annular substantially inextensible reinforcing element, the improvement comprising the addition of means for producing an integral circumferential constricted slot in each of said bead areas during said molding or casting process to permit an interference-fitting of said reinforcing elements subsequent to said molding or casting process, with the cross section of each constricted slot being complementary with the cross section of each reinforcing element to the degree of providing an at least 180° surface contact therebetween.

4,341,252

DECORATIVE CANOPY MEANS FOR TOILET TISSUE ROLL MOUNTING

Doris Schenk, 4732 E. Pleasant Run Pkwy., N. Dr., Indianapolis, Ind. 46201

Filed Jul. 31, 1981, Ser. No. 288,891
Int. Cl.³ E04F *10/00*
U.S. Cl. 160—45 11 Claims



1. A canopy means, as for providing a decorative cover or housing for an installation of a roll of toilet tissue on an associated support means, the canopy means comprising, in combination:

an upper support member, of a generally C-shape, having an intermediate span and end portions extending generally perpendicularly with respect thereto;

the end portions of the upper support member being supportingly connectable to the associated support means;

an enclosure panel means having end panel portions and an intermediate panel portion, the upper portions of which are respectively supportingly associated with each of the upper support member's end portions and intermediate span;

a body member means, of a generally C-shape, having an intermediate span and end portions extending generally perpendicularly thereto; and

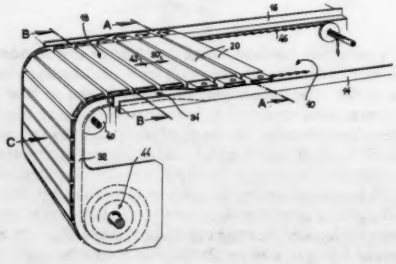
the body member means being connectable to the lower portion of the enclosure panel means, and providing therefor a double function of some weight achieving a downward pull on the enclosure panel means for assuring tautness thereof and an interrelated shaping of the panel portions of the enclosure panel means.

4,341,253

COVER ARRANGEMENT FOR SERVICING HOLES

Anton Eyerle, Stettiner Str. 14, D-8950 Kaufbeuren, Fed. Rep. of Germany

Filed Feb. 29, 1980, Ser. No. 126,107
Claims priority, application Austria, Dec. 11, 1979, 7217/79
Int. Cl.³ E06B *9/08*
U.S. Cl. 160—133 4 Claims



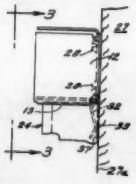
1. An arrangement for covering and uncovering a hole provided in the floor of automotive service stations, the hole having a rectangular horizontal cross-section and vertical side surfaces, said arrangement comprising: a pair of guide rails extending along the upper edges of the side surfaces of the hole, said guide rails each having a horizontal flange and a vertical flange, the horizontal flanges of said pair of guide rails being supported on the floor and the oppositely arranged vertical flanges having a spacing larger than the width of the hole, a pair of vertical guide plates being arranged within the hole of one front end and adjacent the side walls thereof, the spacing of the vertical guide plates being smaller than that between the horizontal flanges of said pair of guide rails, a pair of connection ramps, each of said ramps providing a continuous transition between the vertical flanges of one of the guide rails and the vertical guide plate, a plurality of parallel elongated support members pivotably connected with one another forming said cover for the hole, the ends of said support members being supported on the horizontal flanges of the guide rails, each one of said plurality of support members being of a telescopic construction, a compression spring arranged within each one of said plurality of support members, said compression spring urging the ends of each support member in contact with said vertical flanges of the guide rails, and a driving device for moving the plurality of support members from a first position between the pair of guide rails into a second position between the pair of guide plates, whereby the support members one after another becoming telescopically compressed when passing said pair of ramps.

4,341,254

FRAME FOR A VENETIAN BLIND

Maurice Schaller, Clifton, N.J.; Victor Debs, Staten Island, N.Y.; Leo Abate, Wayne Township, Passaic County, N.J.; James Dodich, New Milford, N.J.; Regino Rodriguez, River Vale, N.J., and Joseph A. Anderle, Clifton, N.J., assignors to Levolor Lorentzen, Inc., Lyndhurst, N.J.

Filed Mar. 24, 1980, Ser. No. 133,112
Int. Cl.³ E06B *9/30, 9/327*
U.S. Cl. 160—172 4 Claims



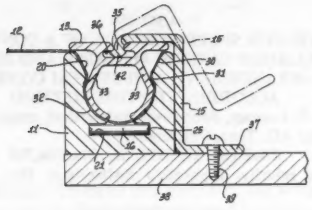
1. For use in connection with a venetian blind having a blind head and slats suspended from said head: a pair of brackets supporting the blind head at opposite ends thereof at a window opening or the like, a frame surrounding the perimeter of at least part of said venetian blind, said frame comprising two substantially U-shaped side channels for respectively receiving opposite ends of said slats, and means for connecting said frame to said brackets and to a structure adjacent said opening, said connecting means including a pair of clips, each clip having a first portion for engagement with the respective bracket, and a second portion adapted to receive and hold in place a top portion of the respective side channel and for resiliently holding said channel against said structure, and fastening means for connecting said brackets and said first portions to said structure.

4,341,255

STORM WINDOW

Donald E. Mock, Azusa, Calif., assignor to Cetec Corporation, El Monte, Calif.

Filed Jun. 12, 1981, Ser. No. 273,225
Int. Cl.[3] A47H 3/00; E06B 3/00
U.S. Cl. 160—369 14 Claims



1. In a window or the like, the combination of:
a frame with frame members defining a glazing face, with first grooves in opposing frame members at said glazing face;
a glazing sheet over said frame members;
lock strips inserted in opposing first grooves, with said sheet disposed between the lock strips and frame members, said lock strips having second grooves parallel with said first grooves; and
mounting clips each having a first end for attachment to a support surface and a second end inserted into a second groove.

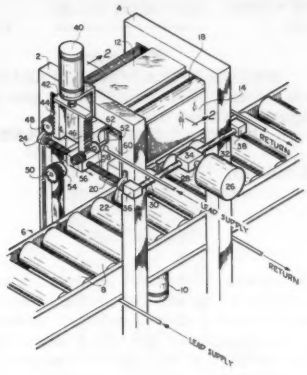
4,341,256

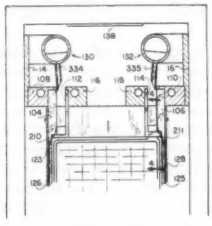
METHOD AND APPARATUS FOR FORMING BATTERY STRAPS AND INTERCELL CONNECTIONS

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Continuation of Ser. No. 752,644, Dec. 20, 1976, Pat. No. 4,241,780. This application Jul. 30, 1980, Ser. No. 173,481
Int. Cl.[3] B22D 19/04, 39/02
U.S. Cl. 164—109 17 Claims

1. A method for automatically casting the commoning straps and intercell connections of a storage battery, said method comprising the steps of:
(a) providing a work surface for receiving a battery case, each cell of said battery case containing stacked positive and negative plates;
(b) providing a battery case having at least two cells defined therein and separated by a cellular partition each cell of said battery case containing stacked positive and negative plates, each of said plates having protruding lugs thereon;
(c) forming mold means around the protruding lugs of said positive and negative plates within said battery case, said mold means comprising respective molding channels for said positive and said negative protruding lugs;
(d) providing molten lead from a reservoir having an outlet means for dispensing molten lead and a return means for receiving molten metal;
(e) providing casting means operatively connected to said outlet means and said return means for circulating said lead through said casting means;
(f) measuring aliquot portions of lead in said casting means;





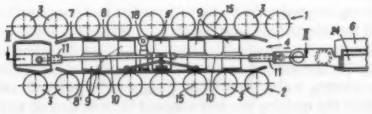
(g) pouring said aliquot portions simultaneously into respective molding channels to cast said straps and intercell connectors.

4,341,257

ARRANGEMENT FOR LOCATING ROLLERS WITH AN INCREASED ROTATORY RESISTANCE IN A ROLLER WAY

Werner Scheurecker, Linz; Josef Wirth, Leonding, and Reinhold Angerer, Linz, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Werksgelande, Austria

Filed Oct. 2, 1980, Ser. No. 193,395
Claims priority, application Austria, Oct. 22, 1979, 6873/79
Int. Cl.[3] B22D 11/00
U.S. Cl. 164—150 15 Claims



1. An arrangement for locating rollers with an increased rotatory resistance in a roller way such as strand guiding rollers in a continuous casting plant, which arrangement comprises
a supporting body movable along said roller way,
a frictional head provided on said supporting body and pressable to the surface area of subsequently arranged rollers,
means for moving said supporting body along said roller way, and

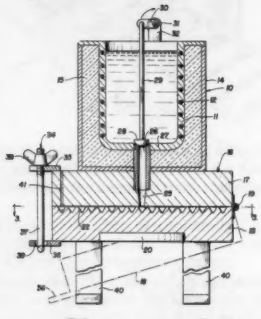
means fo indicating and recording a difference between the velocity of said supporting body with which said supporting body moves along said roller way and the velocity of that part of said frictional head which comes into contact with a roller.

4,341,258

SOLDER RECLAIMING APPARATUS

Arthur G. Wigdahl, West Salem, Wis., assignor to Richard C. Thompson, La Crosse, Wis.

Filed Oct. 7, 1980, Ser. No. 194,879
Int. Cl.³ B22D *27/04, 39/00*
U.S. Cl. 164—337 1 Claim



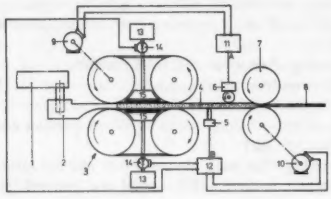
1. A self-contained scrap solder reclaiming apparatus comprising upper and lower superposed flat plate die sections having opposed mating surfaces which surfaces mate to define a horizontal mold parting plane a hinge having a horizontal axis of rotation and connected to each die section along opposed sides surfaces thereof, substantially rigid support legs for the apparatus, each leg having a first end attached to the upper flat plate die section and a second end spaced from said first end and adapted to contact a support surface upon which the apparatus rests, each of said second ends being spaced from said first ends by a distance measured along an axis normal to said horizontal mold parting plane, sufficient to extend substantially beyond the lower flat plate die section to enable the latter to swing downwardly from the upper flat plate die section to a reclaimed solder release position, a single readily releasable fastener element attached to the upper and lower flat plate die sections for securing the lower flat plate die section in opposing abutting relationship with the upper flat plate die section during a reclaiming process, an electrically heated melting pot for scrap solder fixed on the upper flat plate die section and having a bottom molten solder vertical axis feed tube anchored in a bottom wall thereof and projecting below the bottom wall to expose an external surface portion which surface portion is screw-threaded, the upper flat plate die section having surface portion defining a complimentary screw-threaded recess receiving the projecting screw-threaded portion of said feed tube and the upper flat plate die section defining a sprue opening in coaxial registration with a bore of the feed tube and extending through the mating surface of the upper flat plate die section, a metering valve including a generally vertical valve stem within the melting pot and adapted to be seated on and close an upper end of the bore of the feed tube, supporting and operating mechanism for the metering value on the melting pot connected to the stem of said valve near the top of the melting pot, the mating surface of the upper flat plate die section being a substantially smooth face, and the mating surface of the lower flat plate die section having formed therein a continuous long spiral casting groove of substantially V-cross section and having one terminal end substantially at the center of the mating surface of the lower flat plate die section in registration with the sprue opening and a second terminal end near a side surface of the lower flat plate die section whereby the spiral groove occupies a major portion of the surface area of the mating surface of the lower flat plate die section, the upper flat plate die section having a vent port formed therethrough in communication with the spiral casting groove near the second terminal end of the groove, and electrical heating means connected with the lower flat plate die section for heating at least said lower flat plate die section.

4,341,259

METHOD FOR SPEED CONTROL OF A CONTINUOUS METAL STRIP CASTING MACHINE AND ROLLING MILL ARRANGEMENT, AND SYSTEM CONTROLLED ACCORDING TO THIS METHOD

Wilhelm F. Lauener, Recherswil, Switzerland, assignor to W. F. Lauener AG, Thun, Switzerland

Filed Dec. 18, 1979, Ser. No. 104,794
Claims priority, application Switzerland, Dec. 29, 1978, 13268/78
Int. Cl.³ B22D *11/16*
U.S. Cl. 164—454 8 Claims



1. A method for control of a casting and rolling plant including a casting machine having a molding assembly with continuously advancing molding surface for producing a cast strip, means for driving the molding assembly, a rolling mill for rolling the cast strip and means for driving the rolling mill, said method comprising the steps of:

positioning the rolling mill relative the casting machine such that the speed of the cast strip as it exits the casting machine and is fed to the rolling mill is directly affected by the speed of said rolling mill;

measuring the speed of said cast strip between said casting machine and said rolling mill; and

controlling the speed of the means for driving the molding assembly in direct proportion to said measured speed whereby the speed of said casting machine is synchronized with and follows the speed of said rolling mill.

4,341,260

METHOD OF PRODUCING AMORPHOUS METAL TAPES

Toyoaki Ishibachi, Yokosuka, and Masato Sakata, Yokohama, both of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

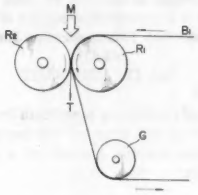
Continuation of Ser. No. 883,859, Mar. 6, 1978, abandoned. This application Apr. 29, 1980, Ser. No. 144,864
Claims priority, application Japan, Mar. 7, 1977, 52-24582; Mar. 8, 1977, 52-25254; Apr. 4, 1977, 52-38355; Jan. 30, 1978, 53-9052; Jan. 31, 1978, 53-9660
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—463 11 Claims

1. A method of producing long, wide amorphous metal tapes having a thickness of less than 0.05 mm, and having a superior dimensional accuracy comprising:

introducing a molten jet of a composition capable of forming an amorphous metal upon rapid cooling directly into a contact nip area formed between a first rotating, working roll, whose surface is comprised of metal, and a contiguous, long open-end, flexible metal belt;

simultaneously rolling and cooling said molten metal on

both sides by said working roll and said belt within said contact area, said contact being effected by providing a second, back-up roll whose surface is comprised of elastic material, and wherein said back-up roll presses elastically said metal belt against said working roll, and both rolls



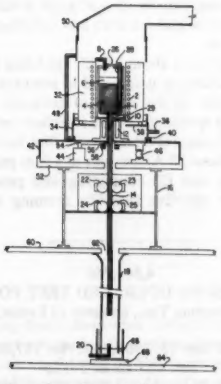
being friction-driven by said metal belt, and wherein said contact nip area formed between said working roll and said metal belt is elastically closed prior to said spraying of said molten metal and is elastically expanded by solidified metal passing into said contact area.

4,341,261

METHOD OF CASTING ELONGATED MEMBERS OF REACTIVE METALS AND REACTIVE METAL ALLOYS

Robert Thomson, and John R. Emmett, both of Ottawa, Canada, assignors to Canadian Patents & Dev. Ltd., Ottawa, Canada

Filed Jun. 9, 1980, Ser. No. 157,532
Claims priority, application Canada, Jul. 18, 1979, 332068
Int. Cl.³ B22D *11/10*
U.S. Cl. 164—475 **6 Claims**



1. A method of casting elongated members of reactive metals and reactive metal alloys comprising:

(a) melting the metal to be cast into a molten state in a vessel with fused slag while blanketing the surface of these contents of the vessel with inert gas;

(b) maintaining the metal in the vessel in a molten state while allowing the molten metal to flow directly from the vessel into an upstream end of a mould protruding into and sealed to a bottom portion of the vessel to maintain the upstream end of the mould flooded with molten metal;

(c) cooling a downstream portion of the mould so that the molten metal issues therefrom as a cast, elongated member; and

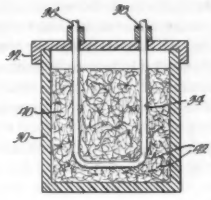
(d) controlling the rate of casting of the molten metal by extracting means pulling the elongated member directly from the mould into an inert gas flushed, elongated member receiving chamber which is sealed to the mould.

4,341,262

ENERGY STORAGE SYSTEM AND METHOD

Thomas R. Alspaugh, 4707 Otomi Ave., San Diego, Calif. 92117

Filed May 5, 1980, Ser. No. 146,493
Int. Cl.³ F28D *17/00*
U.S. Cl. 165—1 **5 Claims**



1. A method of increasing conductivity between chemical energy storage media and energy exchangers in energy storage systems, comprising the steps of coating finely divided filaments of highly conductive material with a protective material for mitigating corrosion of the filaments without materially reducing their conductivity, and dispersing the highly conductive coated filaments throughout the media and causing the filaments to establish highly conductive paths in contact with substantially the entirety of the media and the energy exchanger.

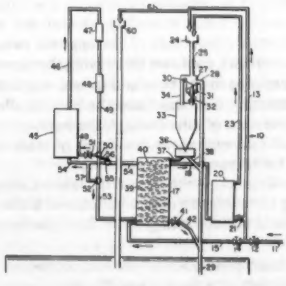
4. A method of mitigating destabilization of chemical energy storage media and increasing conductivity between the chemical energy storage media and energy exchangers in energy storage systems, comprising the steps of dispersing finely divided multitudinous fine strands of highly conductive material through the media, contacting the conductive fine strands with substantially the entirety of the media, the energy exchanger and one another to establish highly conductive paths between substantially the entirety of the media and the energy exchanger, causing the fine strands, by virtue of their composite large surface area, capillary attraction and pointed ends, to mitigate separation, destabilization and supercooling of the media and enhance its useful service life, and stratifying the mixture of the fine strands and the media into layers by inserting therein spaced, generally parallel, sheet-like dividers of highy conductive mesh.

4,341,263

WASTE WATER HEAT RECOVERY APPARATUS

Morteza Arbabian, P.O. Box 1270, Madison, Wis. 53701

Filed Nov. 3, 1980, Ser. No. 203,718
Int. Cl.³ F24H *3/00*
U.S. Cl. 165—40 **9 Claims**



1. Waste water heat recovery apparatus for a building comprising:

(a) a hot water heater delivering hot water to hot water supply pipes;

(b) a waste water drain pipe receiving hot water from the hot water supply pipes after use;

(c) a heat exchanger having an interior chamber filled with a heat transfer liquid having a high heat capacity, a waste water conduit extending through the heat transfer liquid in the heat exchanger and connected to receive at an inlet end the waste water from the waste water drain pipe and discharging waste water at an outlet end, a supply water conduit having an inlet adjacent the outlet of the waste water conduit at which it receives fresh supply water and extending through the heat transfer liquid generally parallel to the waste water conduit up to an outlet, and means for maintaining a temperature gradient in the heat transfer liquid along the waste water and supply water conduits between the inlet and outlet ends of the waste water conduit;

(d) an output line connecting the outlet of the supply water conduit to the hot water heater;

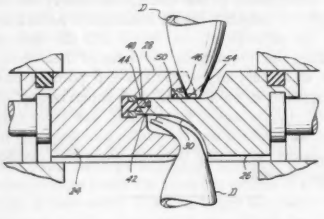
(e) a discharge line connecting the outlet of the waste water conduit to a sewer drain pipe.

4,341,264

WELLHEAD SHEARING APPARATUS

Fern H. Cox, Houston, and Irwin Rosenhauch, Rockwall, both of Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Oct. 15, 1980, Ser. No. 197,115
Int. Cl.³ E21B *29/08, 33/06*
U.S. Cl. 166—55 **9 Claims**



1. A wellhead shearing apparatus comprising

a body having a vertical bore therethrough and opposed guideways extending outwardly from the bore,

a ram assembly having a first and a second ram, said rams being positioned in opposite guideways, one ram having an upper cutting blade extending toward and coacting with the lower cutting blade of the opposite ram,

means associated with each ram for moving the rams into the bore to shear pipe in the bore and to seal across the bore and for retracting the rams from the bore to allow freedom of movement of pipe through the bore,

said rams and said cutting blades being of steel having a maximum hardness of 26 Rockwell C,

a recess extending across the face of the lower cutting blade and having an enlarged volume within said blade to present a shoulder therein facing away from the face of said blade,

a hard metal insert positioned within said recess and forming the forward cutting edge for said blade,

said insert substantially filling said recess to have an enlarged portion therein engaging said recess shoulder to retain said insert within said recess, and

means providing a hard surface on the cutting edge of the upper cutting blade.

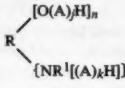
4,341,265

METHOD OF RECOVERING PETROLEUM FROM A SUBTERRANEAN RESERVOIR INCORPORATING A POLYETHER POLYOL

Charles M. Blair, Jr., Buena Park, Calif., assignor to Magna Corporation, Santa Fe Springs, Calif.

Continuation-in-part of Ser. No. 917,054, Jun. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 917,057, Jun. 19, 1978, abandoned. This application Jun. 4, 1979, Ser. No. 45,479
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—274 **33 Claims**

1. The method of recovering petroleum from a subterranean reservoir comprising the steps of: (1) introducing into said reservoir a predeterminable amount of a polyether polyol having the formula:



wherein:

A is an alkylene oxide group, $—C_iH_{2i}O—$;

O is oxygen;

i is a positive integer from 2 to about 10, inclusive;

j is a positive integer no greater than about 100;

k is a positive integer no greater than about 100;

N is nitrogen;

R^1 is one of hydrogen, a monovalent hydrocarbon group containing less than about C_{11}, or;

L is a positive integer no greater than about 100;

R is a hydrocarbon moiety of a non-aromatic polyol, resorcinol, hydroquinone, a primary or secondary polyamine, a primary or secondary amino alcohol, or hydrogen; and

m+n is no greater than about 4 when R is other than hydrogen and one of m and n is zero and the other is unity when R is hydrogen,

said polyether polyol at about 25° C.: (a) being less than about 1% by volume soluble in water and in isooctane; (b) having a solubility parameter in the range of between about 6.9 and about 8.5; and (c) spreading at the interface between distilled water and refined mineral oil to form a film having a thickness no greater than about 20 Angstroms at a film pressure of about 16 dynes per cm; and (2) contacting said petroleum in said reservoir with an effective thin film forming amount of said polyether polyol.

4,341,266

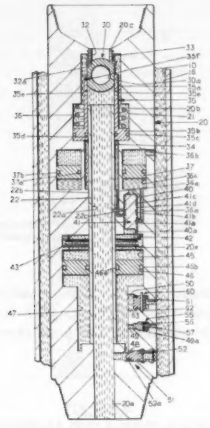
PRESSURE OPERATED TEST TOOL

Gene C. Craig, Houston, Tex., assignor to Lynes, Inc., Houston, Tex.

Filed Sep. 15, 1980, Ser. No. 187,283
Int. Cl.³ E21B *34/10*
U.S. Cl. 166—317 **10 Claims**

1. A primary valve for use in a subterranean well test string positionable in a well bore and having a packer arranged for selectively sealing the well bore to isolate the annulus between the well bore and the test string above the packer from that portion of the well bore below the packer, comprising: means for mounting said primary valve in said test string for movement between an open and closed position relative to the interior of said test string; an actuating piston for shifting said primary valve between said open and closed positions; resilient means urging said actuating piston to its valve closing position; a first fluid reservoir containing an isolated fluid; a shiftable control valve for selectively connecting one end of said piston to one of said first fluid reservoir and said test string bore, said control valve having opposed piston faces, one piston face on said control valve being exposed to said isolated fluid; means responsive to an increase in annulus pressure above well bore hydrostatic pressure for increasing said isolated fluid pressure

to shift said control valve to cause said isolated fluid to open said primary valve; and means including said other piston face responsive to a subsequent decrease in annulus pressure to well



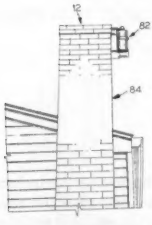
bore hydrostatic pressure for shifting said control valve to remove the isolated fluid from said actuating piston, thereby permitting said primary valve to be closed by said resilient means.

4,341,267

CHIMNEY FIRE EXTINGUISHER

Guy Lagasse, 94 Bush Hill Rd., Manchester, Conn. 06040

Filed Jul. 9, 1980, Ser. No. 167,385
Int. Cl.³ A62C *37/00*
U.S. Cl. 169—54 **4 Claims**



1. A chimney fire extinguisher comprising:

a. a container containing fireextinguishing material;

b. bracket means having a first portion dimensioned and configured to seat upon the cap of an associated chimney, said bracket means having a second portion engaged with said container and being adapted to suspend said container outside the associated chimney, said bracket means including a unitary generally U-shaped member having first and second leg portions and a web portion extending therebetween, said first leg portion providing a first clamp surface adapted for abutting the interior surface of the associated chimney at its cap, said bracket means further including support means supporting said container on said second leg portion of said U-shaped member and a plate member providing a second clamp surface adapted for abutting the interior surface of the associated chimney at its cap, said plate member being disposed between said legs, extending generally parallel thereto, and being adjustably mounted on said web portion of said U-shaped member for varying the spacing between said plate member and said first leg portion and thereby between said clamp surfaces to accommodate chimney walls of different thicknesses;

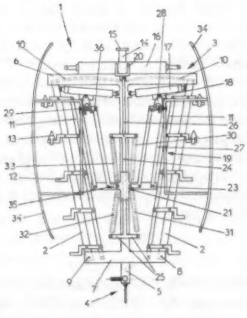
c. conduit means having one end communicating with the interior of said fluid container, the other end of said conduit means being spaced from said container for positioning inside the associated chimney and adjacent said first portion of said bracket means when said bracket means seats upon the associated chimney cap and said container is suspended by said bracket means outside the associated chimney, said conduit means including flow-control means preventing flow through said conduit means in its normal state and permitting flow through said conduit means in a second state, said flow-control means including fusible means maintaining said flow-control means in said normal state but being fusible at a predetermined temperature above the normal expected interior temperature of the associated chimney adjacent its cap to cause said flow-control means to assume said second state and thereby permit said fire-extinguishing material to flow through said conduit and quench a fire in the chimney causing the high temperature when said chimney fire extinguisher is mounted by said bracket on the cap of the chimney.

4,341,268

PLOUGH FOR WORKING EARTH BETWEEN PLANT ROW

Julien Hugg, 7, route du Vin, Bergheim (Haut-Rhin), France

Filed Feb. 19, 1980, Ser. No. 122,379
Claims priority, application France, Feb. 19, 1979, 79 04916
Int. Cl.³ A01B *13/04*
U.S. Cl. 172—5 **6 Claims**

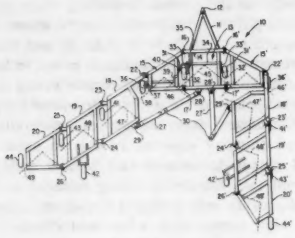


1. A plough for earth working between rows of plants, comprising a movable chassis, horizontally swingable members carried by the chassis, tool holders carried by the horizontally swingable members for holding tools to plough the earth, means to swing the horizontally swingable members toward and away from each other to decrease and increase, respectively, the width of the earth to be ploughed according to the distance between the plants in the rows, and means for centering the plough on laterally inclined ground, said centering means comprising a ground-engaging member carried by the chassis, that swings about a vertical axis in one direction or the other upon lateral tilting of the chassis on inclined ground, and linkage mechanically interconnecting said ground-engaging member and said horizontally swingable members to move both said horizontally movable members laterally in a direction opposite to the direction in which the chassis tilts.

4,341,269
WING BACK IMPLEMENT

Simon A. Hann, Nobleford, Canada, assignor to Versatile Cornat Corporation, Vancouver, Canada

Filed Mar. 27, 1980, Ser. No. 134,581
Claims priority, application Canada, Feb. 27, 1980, 346549
Int. Cl.[2] A01B 73/00
U.S. Cl. 172—311 4 Claims



2. An implement used for tillage purposes comprising a tongue adapted for connection at one end to a source of pull power, a centre frame connected to the opposite end of said tongue, a plurality of end frames extending outwardly from said centre frame in a generally diverging direction, sub-frames interconnected between said centre frame and said end frames on respective opposite sides of the centre of said implement, said sub-frames being connected to said centre frame about substantially horizontal axes to allow independent vertical movement of said sub-frames relative to said centre frame, said end frames being interconnected by substantially horizontal axes adapted to allow independent vertical movement of each respective said end frame relative to its adjoining said end frame, said end frames being adapted for pivotal rotation about substantially vertical wing-back pivot points located on said sub-frames on opposite sides of the longitudinal axis of said implement, wheel means mounted below said centre frame, said sub-frames and said end frames to allow movement of said implement, the wheel means mounted on said centre frame and said sub-frames operating independently of the wheel means mounted on said end frames, and reinforcement means movable between extended and retracted positionsand being pivotally connected behind said wing-back pivot points, said reinforcement means acting to provide reinforcement for said end frames on respective opposite sides of said centre frame when in the extended position whereby the implement is adapted for operation when said reinforcement means is extended and for transportation when retracted.

4,341,270
DRILL STRING SUSPENSION TOWER

Scott M. Ferguson, San Francisco, Calif., assignor to Great American Development Co., San Francisco, Calif.

Filed Jun. 16, 1980, Ser. No. 160,048
Int. Cl.[3] B23Q 5/00; E21C 5/00; B23B 5/027
U.S. Cl. 173—151 16 Claims

1. A drill string suspension apparatus for use in conjunction with a hook supporting said drill string during well drilling operations, comprising:

(a) a generally vertically extending frame;

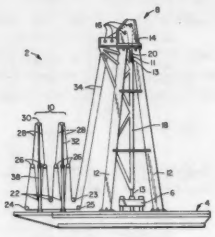
(b) means for movably supporting said hook along a first path within said frame, said first path being generally coaxial with said drill string;

(c) a belt coupled to said movable support means and adapted for raising and lowering said movable support means and said drill string attached thereto along said first path; and

(d) a belt take-up assembly operably coupled to said supporting means via said belt, said take-up assembly comprising:

(i) at least two belt guiding means, at least one of which is movable relative to the other belt guiding means, said belt guiding means adapted to guide the belt along a second, variable length path; and

(ii) means for changing the relative positions of said belt

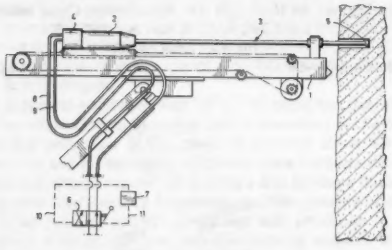


guiding means so the length of said belt passing along said second variable length path is changed thereby causing the position of said hook along said first path to change.

4,341,271
ROCK DRILLING METHOD

Antero Anttila, Tampere, Finland, assignor to OY. Tampella AB, Tampere, Finland

Continuation of Ser. No. 820,997, Aug. 1, 1977. This application Apr. 22, 1980, Ser. No. 142,801
Claims priority, application Finland, Aug. 25, 1976, 762440
Int. Cl.[3] E21B 6/00
U.S. Cl. 175—24 9 Claims



1. A rock drilling apparatus, comprising a rock drill adapted to receive an elongate drill steel and rotate the drill steel bidirectionally about the longitudinal axis thereof, a feeding device upon which the rock drill is mounted to be advanced and retracted in directions parallel to said longitudinal axis, and control means connected to said rock drill for automatically reversing the direction of rotation of the drill steel in accordance with a predetermined program and independently of the change of the direction of movement of the rock drill after the steel has completed several full turns in either direction.

4,341,272
METHOD FOR FREEING STUCK DRILL PIPE

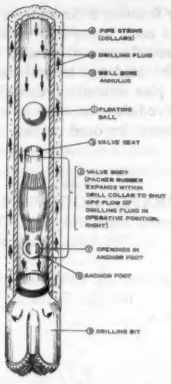
Joseph S. Marshall, 611 Eastland Ave., Ruston, La. 71270

Filed May 20, 1980, Ser. No. 138,582
Int. Cl.[3] E21B 31/00
U.S. Cl. 175—65 3 Claims

1. A method for dislodging a stuck-off-bottom drill string, including a drill bit and drill pipe, comprising the steps of:

(a) pumping a valve body down inside the drill string to anchor at or above the drill bit in a position to receive a spherical member for sealing action, said valve body having means for diverting drilling fluid into means for ex-

panding its diameter upon receiving said spherical member, thereby sealing itself against the inside of the drill string and consequently blocking off flow in the drill string; and


PIPE STRING (COLLARS)
DRILLING FLUID
WELL BORE ANNULUS
FLOATING BALL
VALVE SEAT
VALVE BODY (PACKER RUBBER EXPANDS WITHIN DRILL COLLAR TO SHUT OFF FLOW OF DRILLING FLUID IN OPERATIVE POSITION, RIGHT)
OPENINGS IN ANCHOR FOOT
ANCHOR FOOT
DRILLING BIT

(b) pumping said spherical member down the drill string to seat in said valve body, thereby causing said body to expand and block the flow of drilling fluid, resulting in a hammer-like impetus to force the drill string down and out of the stuck position.

4,341,273

ROTARY BIT WITH JET NOZZLES

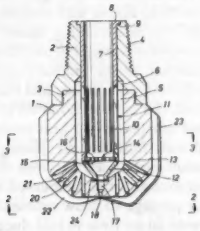
Bruce H. Walker, Salt Lake City, Utah, and Robijn Feenstra, Rijswijk, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 28, 1981, Ser. No. 267,957

Claims priority, application United Kingdom, Jul. 4, 1980, 8022050

Int. Cl.³ E21B *10/18, 10/60, 12/06*

U.S. Cl. 175—339 **13 Claims**



1. Rotary bit with cutting elements and a plurality of liquid-discharger nozzles for drilling hole in an underground formation, the bit including a body with a central cavity and a shank attached to the body and enclosing a central fluid passage that communicates with the cavity, a first self-cleaning screening element with a plurality of fluid passages allowing the passage of a predetermined size range of particles carried by a fluid, the element being at least partly mounted in the cavity and dividing the cavity in a first part communicating with a first set of nozzles, and a second part communicating with the central passage of a drill string when the shank of the bit is copuled thereto, said second part being divided in two further parts by a second screening element having a plurality of fluid passages through which coarser particles can pass than through the fluid passages of the first screening element, one of these two further parts communicating with the fluid passages in the first screening element, and the other part communicating with a second set of nozzles that are fewer in number than the first set of nozzles, the fluid passage through each of the nozzles of the second set being larger than the fluid passage through each of the nozzles of the first set and being at least equal to a fluid passage of the second screening element.

4,341,274

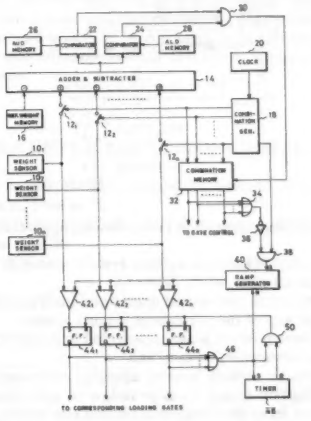
COMBINATION WEIGHING DEVICE

Takashi Hirano, Kobe, and Takashi Aga, Akashi, both of Japan, assignors to Yamato Scale Company, Ltd., Hyogo, Japan

Filed Apr. 6, 1981, Ser. No. 251,396

Int. Cl.³ G01G *13/02*

U.S. Cl. 177—25 **2 Claims**



1. A combination weighing device, comprising a plurality of balances for weighing a plurality of articles to produce electric signals indicative of the measured weights, respectively; arithmetic means having a plurality of input terminals for receiving said electric signals, respectively, for summing up the received electric signals, comparing the resultant sum with reference signals indicative of a predetermined range of weight and, when the sum falls within said range, producing an output signal; a plurality of normally-open switches provided with control terminals and inserted between said weighing balances and said input terminals of said arithmetic means, respectively; switch control means having output terminals coupled respectively to said control terminals for producing control signals from said output terminals selected successively in accordance with a predetermined set of combinations to close the corresponding ones of said normally-open switches; and output means for storing said combinations of the outputs of said switch control means successively and responding to the output signal of said arithmetic means to supply a combination of outputs stored at that time to utilization means; trouble detecting means for detecting lack of output from said output means during each cycle of operation of said switch control means to produce an output signal; a ramp generator for generating a ramp signal in response to the output signal of said detecting means; a plurality of comparators having a first input terminal for receiving said ramp signal and a second input terminal for receiving the output signal from each weighing balance to produce an output signal when both input signals coincide with each other; and second output means for responding to the output of said comparator to supply an output control signal to corresponding one of said utilization means.

4,341,275

MEASURING APPARATUS WITH ELECTROMAGNETIC FORCE COMPENSATION AND CAPACITIVE POSITION SENSOR

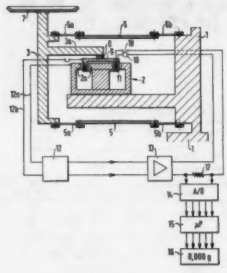
Eberhard Stadler, Göttingen, and Franz-Josef Melcher, Hardegsen, both of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,420

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1980, 3012979

Int. Cl.³ G01G 7/02

U.S. Cl. 177—212 5 Claims



1. An electromagnetically compensating apparatus, comprising:

a stationary permanent magnet system having a pole plate and an air gap;

a compensation coil wound upon a coil form and movable in the air gap of the permanent magnet system;

a capacitive position sensor connected to detect the position of the compensation coil; and

an automatic volume control amplifier series-connected to the position sensor so as to follow it, and whose output current feeds the compensation coil and strives to hold it in a prespecified zero position; wherein the coil form of the compensation coil, and the pole plate of the permanent magnet system each form an electrode of the position sensor.

4,341,276

FRAME STRUCTURE FOR CONSTRUCTION VEHICLES

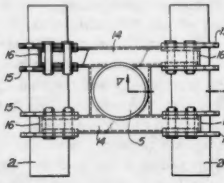
Takeshi Furuichi, Ibaraki, Japan, assignor to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1980, Ser. No. 172,180

Claims priority, application Japan, Jul. 27, 1979, 54/94948

Int. Cl.³ B62D 55/00

U.S. Cl. 180—9.48 6 Claims



1. A frame structure for a construction vehicle having a lower frame and a pair of track frames connected to the lower frame, said frame structure comprising:

a pair of beams of an elongated box shape constituting a part of said lower frame and extending substantially horizontally crosswise of the vehicle;

bracket means comprising a pair of free-standing plates secured to an upper surface of each of said track frames in a manner extending vertically upwardly therefrom and disposed parallel to said beams so as to closely receive each of the opposite end portions of each of said beams therebetween; and

pin means for forming a connection between each end portion of said each beam and each pair of plates of said bracket means thereby to connect said lower frame to said track frames, said pin means comprising a plurality of removable pins extending through said plates and the beams received therebetween so as to fully bear the loads and movements imposed on said connection.

4,341,277

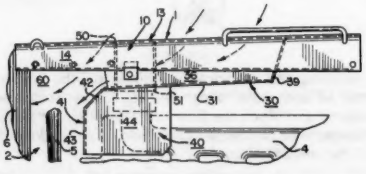
PERFORATED HOOD WITH AIR SCOOP

Joseph W. Adamson, and Clifford W. Corr, both of Springfield, Ill., assignors to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Jun. 23, 1980, Ser. No. 161,675

Int. Cl.³ B60K 11/04

U.S. Cl. 180—54 A 10 Claims



1. A hood assembly for use in an off-the-road vehicle having a liquid cooled internal combustion engine which hood assembly is particularly adapted for collecting ambient air above the engine and delivering the collected ambient air to an engine coolant heat exchanger with minimal thermal contact of the air with the engine comprising; hood means forming a portion of an engine compartment of the vehicle, said hood means having a portion positioned above the engine and a portion positioned above a space between the engine and the engine coolant heat exchanger, said hood means having inlet means to receive a flow of ambient air from above and outside the engine compartment, said inlet means extending above a portion of the engine, duct means rigidly coupled to said hood means to form an air passage therewith in the engine compartment in fluid communication with said inlet means, said duct means isolating said air passage from the engine mounted in the engine compartment to prevent substantially a heat exchange relationship between the air drawn into said air passage means and the engine, and fan means positioned between the engine and the engine coolant heat exchanger and mounted in fluid communication with said air passage to draw ambient air through said inlet means and create an air flow in said duct means to deliver ambient air to the engine coolant heat exchanger to be exhausted from the engine compartment through the engine coolant heat exchanger.

4,341,278

WHEELCHAIR

Wilhelm Meyer, 7 Kirchstrasse, 4973 Vlotho, Fed. Rep. of Germany

Filed Feb. 12, 1980, Ser. No. 120,822

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1979, 2906372

Int. Cl.³ B62D 5/04

U.S. Cl. 180—79.1 1 Claim

1. A wheelchair having an electric drive and steerable wheels pivotally mounted and displaceable into a desired lateral angular position, an electromechanical control apparatus for turning said wheels, said control apparatus comprising:

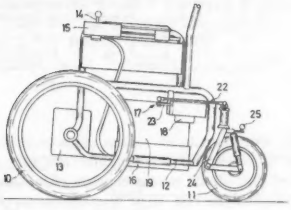
a control circuit, and a control stick for actuating said con-

trol circuit, said control circuit including a voltage divider means which is provided with a voltage which is dependent upon the traveling speed of the wheelchair;

an electric control motor for controlling the pivotal movement of the steerable wheels;

first potentiometer means coupled to receive a voltage output from said voltage divider means, said first potentiometer means arranged for actuation by said control stick to provide a nominal value output signal;

second potentiometer means coupled to receive a voltage output from said voltage divider means, said second potentiometer means arranged for actuation in accordance



with the actual value of the angular position of said steerable wheels, said second potentiometer means providing an actual value output signal; and,

differential amplifier means having a first input coupled to receive said nominal value signal and a second input coupled to receive said actual value signal, and having an output, said differential amplifier means output coupled to said electric control motor for controlling the pivotal movement of said steering wheels, whereby pivotal movement and steering lock of said steerable wheels are controllable in dependence upon the traveling speed of the wheelchair.

4,341,279

MOBILE X-RAY APPARATUS

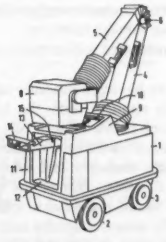
Hans Waerve, Sollentuna, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 940,377, Sep. 7, 1978, abandoned. This application Jun. 27, 1980, Ser. No. 163,712

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1977, 7730536[U]

Int. Cl.³ B62D *3/02*

U.S. Cl. 180—19 S **1 Claim**



1. In a four-wheeled cart suitable for supporting an X-ray apparatus thereon, with two powered wheels at a selected end of the cart and a steering handle rotatably attached to the selected end of the cart, an improvement wherein:

each of said four wheels has substantially the same diameter;

each of said powered wheels has a motor connected thereto; and an improved steering device comprising:

first and second vertical members rotatably connected to the powered wheels;

first and second spaced apart bearings mounted on the cart, each said bearing rotatably supports one of said vertical members for rotation about a vertical axis adjacent each respective powered wheel;

first and second rigid elongated rods, each said rod is pivotably connected between one of said vertical members and an interconnection plate mounted on the cart for essentially only rotation about a fixed vertical axis;

an articulated linkage connected only to a rotatable section of the steering handle and said interconnection plate whereby rotary movement of the steering handle in a first arcuate direction only rotates said interconnection plate a corresponding amount which in turn rotates each powered wheel about said adjacent vertical axis in the first arcuate direction and rotary movement of the steering handle opposite said first arcuate direction correspondingly only rotates said interconnection plate a corresponding amount which in turn rotates each powered wheel about said adjacent vertical axis in the opposite arcuate direction.

4,341,280

VARIABLE DISPLACEMENT FRONT WHEEL DRIVE SYSTEM

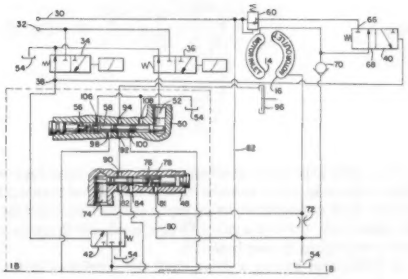
Joseph E. Dezelan, Western Springs, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

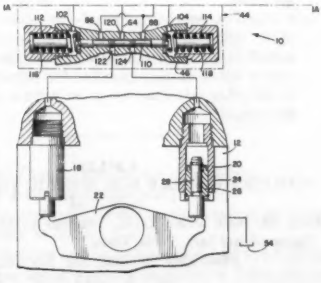
PCT No. PCT/US80/00121, § 371 Date Feb. 4, 1980, § 102(e) Date Feb. 4, 1980

PCT Filed Feb. 4, 1980, Ser. No. 149,354

Int. Cl.³ B60K *25/00*

U.S. Cl. 180—243 **10 Claims**





1. In a vehicle having a primary hydraulic system including pump means to supply fluid to the vehicle accessories, a variable displacement auxiliary front wheel drive system (10) to drive at least one wheel of said vehicle, the improvement comprising: at least one variable displacement fluid motor

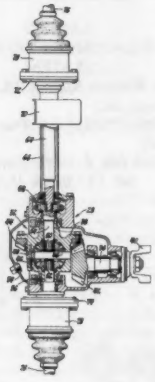
means (12,14,16), fluid supply means (30,32) for supplying fluid under pressure to said fluid motor means (12,14,16), pressure compensating control means (44) operative to cause said fluid motor means (12,14,16) to destroke when the fluid pressure from said fluid supply means drops below a predetermined level, fluid control means (34,36,40) connected to selectively block fluid from said fluid supply means (30,32) to said pressure compensating control means (44) and said fluid motor means (12,14,16) to render said fluid motor means (12,14,16) inoperative, and drain means (42,50) operative to drain fluid from said pressure compensating control means (44) in response to the operation of said fluid control means (34,36,40) to block fluid from said fluid supply means (30,32).

4,341,281

SPLIT AXLE DRIVE MECHANISM

Laszlo Nagy, St. Clair Shores, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 3, 1980, Ser. No. 126,561
Int. Cl.³ B60K *23/08*
U.S. Cl. 180—247 **5 Claims**



1. A split axle drive mechanism for a part-time four-wheel drive vehicle having a transfer case which includes an auxiliary output shaft connectable to an input shaft of the transfer case for selectively driving a pair of vehicle wheels through a split axle comprising, in combination,

a differential having a drive shaft for receiving drive from the auxiliary output shaft of the transfer case and two outputs connected to respective side gears of the differential and adapted to be connected to respective parts of the split axle,

one of said outputs being directly connected to one side gear of the differential and the other of the outputs being connected to the other side gear of the differential through a clutch which is disengageable for preventing back drive to the other side gear when the vehicle is in a two wheel drive mode.

4,341,282

CARRIER VEHICLE FOR SEISMIC VIBRATIONAL SYSTEM

James M. Bird, Tulsa, Okla., assignor to Industrial Vehicles International Inc., Tulsa, Okla.

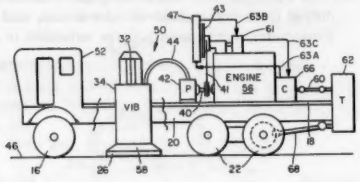
Filed May 19, 1980, Ser. No. 151,256
Int. Cl.³ G01V *1/04*
U.S. Cl. 181—114 **11 Claims**

1. In a vehicle having only a single engine, for transport and powering of a seismic hydraulic vibrator for over the road use, comprising;

(a) means to carry a seismic hydraulic vibrator on said vehicle, and to drive an hydraulic pump from said single engine, for pressurizing a selected first fluid for powering said vibrator, and means to control said vibrator;

(b) gear transmission means between said single engine and the wheels of said vehicle;

the improvement in means to repeatedly rapidly start said vehicle, for short distance travel, while said engine is running continuously at or near maximum speed; comprising;



(c) a first wet disc clutch means connected into the drive system between said single engine and said wheels; said first wet disc clutch means capable of repeatedly starting said vehicle from rest, at or near maximum engine speed;

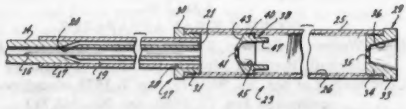
whereby said single engine operating at or near maximum engine speed alternately powers the operation the said vibrator when said vehicle in at rest and powers operation of traversal of the vehicle over a series of about equal new vibration points of short distances said operations being at a constant gear ratio.

4,341,283

SOUND SUPPRESSION SYSTEM

Vincent E. Mazzanti, 1020 Prospect St., Suite 312, La Jolla, Calif. 92037

Filed Oct. 15, 1980, Ser. No. 197,080
Int. Cl.³ F41C *21/18*; F01N *1/08, 1/16, 7/08*
U.S. Cl. 181—223 **7 Claims**



1. A sound suppression system for firearms comprising:

a sound suppression chamber having a longitudinally extending tubular housing with a first end and an opposite second end, a first wall structure closes said first end and it has an aperture therein through which passes a longitudinally extending tubular member;

baffle means are positioned within the interior of said tubular housing;

said tubular member having a plurality of gas passage means whose first ends connect with the bore of said tubular member and which pass longitudinally along the length of said tubular member in the area of the tubular between its bore and its outer diameter and whose opposite second ends exit from the front end of the tubular member directly into said sound suppression chamber adjacent one face of said baffle means whereby said gases under a high pressure and traveling at a high speed are directed to said sound suppression chamber through said tubular member, a portion of said gases upon reaching the first end of said gas passage means will enter these gas passage means and accelerate their speed of travel, relative to that remaining portion of gases continuing along the axial bore of said tubular member, so that they exit from the second end of said tubular passage means and are directed against said baffle means prior to the arrival of the remaining portion

of the gases that had continued along the axial bore of said tubular member; and

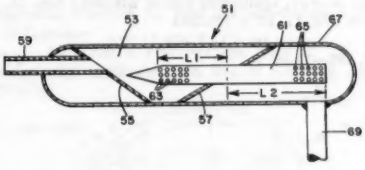
said bore and said gas passages being free of any valves that might function to close any of these passages during the operation of said sound suppression system.

4,341,284

SILENCER MEANS FOR INTERNAL COMBUSTION ENGINES

James W. Moore, and Rudolph A. Peterson, Jr., both of Horicon, Wis., assignors to Deere & Company, Moline, Ill.

Filed Dec. 20, 1979, Ser. No. 105,772
Int. Cl.³ F01N *1/08*
U.S. Cl. 181—272 **2 Claims**



1. In combination with a two-cycle engine, a silencer including a housing defining a generally cylindrical shaped chamber closed at the ends, a first plate having a generally elliptical shape fixedly mounted rearwardly in said chamber in an angled orientation to form a converging longitudinal crosssection area in said chamber, said first plate's periphery being in continuous communication with portion of said housing, a second plate having a generally elliptical shape fixably mounted forward in said chamber in an opposing angled orientation to said first plate to form a diverging longitudinal cross-section area in said chamber, said second plate's periphery being in continuous communication with a portion of said housing, said first and second plates being in longitudinally spaced relationship, an exhaust pipe leading from said engine's exhaust ports to said chamber, a portion of said exhaust pipe being fixably mounted in said second plate, wherein the improvement comprises, a stinger fixably mounted in said first plate and closed at each end having a first portion extending forward of said first plate, and a second portion extending rearward of said first plate and enclosed by said housing, said stinger having a plurality of perforations placed around each end, a tail pipe fixably mounted in said housing rearward of said first plate.

4,341,285

EMERGENCY ESCAPE DEVICE

Eli G. Krickovich, P.O. Box 106, Clinton, Iowa 52732

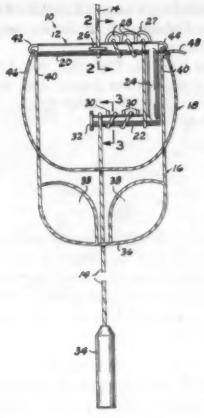
Filed Dec. 30, 1980, Ser. No. 221,493
Int. Cl.³ A62B *1/14, 1/20*
U.S. Cl. 182—6 **2 Claims**

1. An emergency escape device, comprising;

a generally U-shaped frame disposed in a vertical plane when in use and including at least one horizontally disposed tubular leg having spaced-apart rope guides on its periphery and having a closed loop at its respective ends;

an elongated escape rope capable of extending from an elevated position to the surface of the earth and being helically wound, intermediate its ends, around said frame leg through said rope guides;

a flexible leg harness secured in depending relation to said closed loops; and,



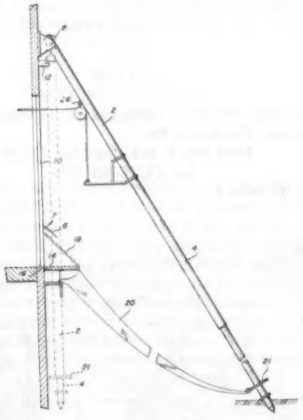
a stabilizing weight secured to the depending end portion of said escape rope.

4,341,286

FIRE ESCAPE IMPROVEMENT

Charles A. Gregory, Ormsbee Rd., Porters Corners, N.Y. 12859

Filed Nov. 12, 1980, Ser. No. 206,264
Int. Cl.³ A62B *1/06, 1/20*
U.S. Cl. 182—10 **4 Claims**



1. An improved Fire Escape Device comprising:

a multi-section axially telescopic pole;

a transverse pin positioned normally in said pole to hold said telescopic piece in housed position,

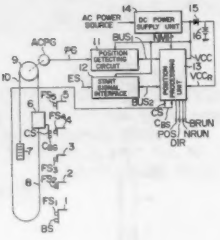
pivot means attaching said pole at its upper end to a building thereby supporting said pole to lie normally alongside said building, while permitting said pole to be pivoted outwardly from said building,

means restricting said transverse pin to pull the same from said pole as the latter is pivoted away from the building, thereby releasing the stored telescopic sections for gravity actuation to a slide pole position.

4,341,287
ELEVATOR CONTROL APPARATUS

Soshiro Kuzunuki; Kotaro Hirasawa; Masumi Imai, all of Hitachi; Takeo Yuminaka, Katsuta; Kazuhiro Sakata, Katsuta, and Kanji Yoneda, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 140,416
Claims priority, application Japan, Apr. 14, 1979, 54-44864
Int. Cl.³ B66B *3/02*
U.S. Cl. 187—29 R 17 Claims

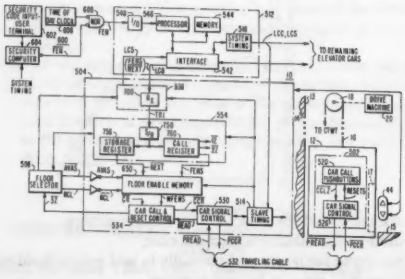


1. An elevator control apparatus for an elevator car which is mounted for movement between a plurality of floors of a building, comprising means for driving the elevator car, means for generating a train of pulses corresponding to the running distance of the elevator car driven by said driving means, car position detecting means including means for counting the number of said pulses to detect the instantaneous position of the elevator car, means for controlling the elevator car depending on the detected position of the elevator car as indicated by said car position detecting means, means for storing predetermined pulse number correction data representing a correction factor relating to the operating characteristic of the elevator car, and means for correcting the count of said car position detecting means with said correction data each time the elevator car is actuated from its standstill condition.

4,341,288
ELEVATOR SYSTEM

Jerry D. Bass, Martinez, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 6, 1981, Ser. No. 232,287
Int. Cl.³ B66B *1/16*
U.S. Cl. 187—29 R 11 Claims

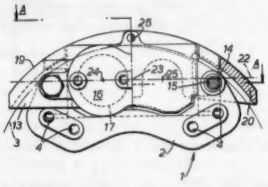


1. An elevator system, comprising:
a building having a plurality of floors,
at least one elevator car having car call means, said at least one elevator car being mounted in said building to serve the floors therein,
security means at at least one of the floors for recognizing predetermined security inputs,
enabling means providing a floor enabling signal for a predetermined floor, with said floor enabling signal persisting for a predetermined period of time sufficient to enable a call to be registered via the car call means, in response to the recognition of a security input by said security means,
memory means responsive to a car call for the enabled floor within the predetermined period of time for providing a second enabling signal for the enabled floor,
and control means responsive to the second enabling signal and to the car call for causing the elevator car to serve the car call and to provide a completion signal when the service has been completed,
said memory means terminating the second enablement signal in response to said completion signal.

4,341,289
DISC BRAKES

George W. Smith, Studley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Sep. 11, 1979, Ser. No. 74,532
Claims priority, application United Kingdom, Sep. 25, 1978, 38065/78; Jun. 11, 1979, 7920204
Int. Cl.³ F16D *55/224*
U.S. Cl. 188—73.39 4 Claims



1. A disc brake assembly for use in combination with a rotating brake disc, comprising: a carrier member for mounting in a fixed position straddling the periphery of the brake disc; first and second brake pads mounted directly on the carrier member for engaging opposite faces of the brake disc, the brake pads being located on the carrier member such that drag forces imposed on the pads in use are transferred directly to the carrier member; and a clamping member for forcing the pads towards each other and into engagement with the brake disc, the clamping member being slidably mounted on the carrier member for movement parallel to the axis of rotation of the disc and comprising a first portion located on one side of the disc and including means for forcing the pad located on that side of the disc towards the disc and operating on said clamping member to move it by reaction in the opposite direction, and a second portion located on the other side of the disc and connected to the first portion by a pair of circumferentially spaced integral connecting means, said second portion engaging the pad located on that side of the disc for forcing same towards the disc upon reaction movement of said clamping member, the connecting means when viewed in a direction parallel to the axis of rotation of the disc being disposed substantially symmetrically with respect to a central plane of clamp of the brake assembly which plane passes through both connecting means and contains the axis of pressure of the disc brake assembly, said connecting means each comprising an arcuate web of metal integral with the first and second portions of the clamping member and being spaced from and closely following the circular periphery of the disc along the entire length of said web to define with the disc periphery a small air gap, said connecting means also defining the circumferentially extreme position of the parts of the brake assembly which span the disc, said first and second portions extending radially inwardly from said arcuate webs in planes parallel to the plane of disc rotation whereby when a substantially radial cross-section taken through a web where said central plane of clamp also passes through said web is viewed in a direction normal to the

axis of disc rotation, said web and said first and second portions define an inverted U-shaped, said first and second portions of said clamping member being unconnected apart from the spaced connecting means to define an open top in said clamping member, said carrier member having a bridge portion extending into said open top and there spanning the periphery of the disc, said bridge portion having circumferentially spaced outer edges adjacent respective circumferentially spaced inner edges of the respective connecting means, said bridge portion also having circumferentially spaced inner edges for slidably guiding said brake pads, the circumferential space between said inner edges of said bridge portion on either side of said disc being open to define an open top in said carrier member whereby said pads may be radially withdrawn without removing said clamping member from said carrier member.

4,341,290

DEVICE FOR AUTOMATICALLY CONTROLLING THE BRAKING FORCE OF AN EDDY CURRENT AND/OR FRICTION TRACK BRAKE

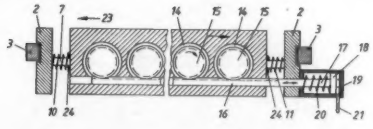
Max Baermann, Postfach 26, 5060 Bergisch-Gladbach 1, Fed. Rep. of Germany

Filed Jun. 2, 1980, Ser. No. 155,471

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1979, 2923739

Int. Cl.³ B60L *7/28*

U.S. Cl. 188—165 **9 Claims**



1. In an eddy current and/or friction track brake for a moving vehicle which is infinitely variable by means of movable permanent magnets, preferably arranged such that poles of alternate polarity result in the direction of motion, and which can be lowered onto the track for the purpose of braking by frictional forces, said brake including a movable member coacting with said magnets to move same between a brake on to a brake off position, the improvement which comprises: means mounting said brake on the vehicle such that it is shiftable relative to the vehicle in the direction of motion and of a distance corresponding to a required control range, a control element between at least one end face of said brake and a part fastened to the vehicle, said element being operatively connected with said member for moving said permanent magnets in response to forces on said brake produced during braking by frictional forces with the track, said control element acting to reduce the braking force by moving said permanent magnets toward the brake off position whereby the permissible deceleration force is not exceeded.

4,341,291

LOAD CONTROL LINK

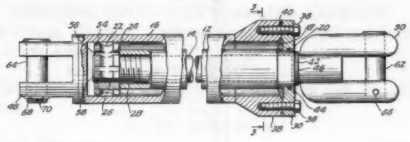
John F. Flory, Morristown, and Steven P. Woehleke, Convent Station, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 23, 1980, Ser. No. 152,855

Int. Cl.³ F16F *7/12*

U.S. Cl. 188—375 **2 Claims**

1. A device for controlling tension loads comprising: a housing, a shaft within said housing, a cutting member, cutting means bearing on said cutting member, said cutting member having a cylindrical inside surface and said cutting means comprising a disc concentric within said cutting member and mounted on said shaft, said disc having a cutting edge on its outside periphery and said cutting member having an inside diameter slightly smaller than the outside diameter of said disc, and connection means attached at the opposite end of said housing or said shaft such that tension load applied to said connection means tends to produce relative motion between said cutting means and said cutting member resulting in energy dissipation by the action of cutting material from said cutting member, said cutting member comprising a material characterized by having a cutting force substantially independent of cutting speed, and wherein said housing contains fluid and centering means for centrally locating said shaft in said housing including passages for enabling said fluid to flow therethrough as said shaft is withdrawn from said housing.



4,341,292

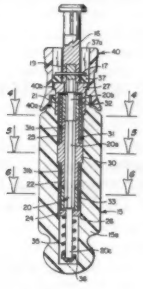
FREELY-REVERSIBLE TORQUE-APPLYING HANDLE ASSEMBLY WITH DIRECTION OF TORQUE-APPLICATION SELECTION

Ignacio Acevedo, 4066 Fenwick Rd., Columbus, Ohio 43220

Filed Aug. 28, 1980, Ser. No. 182,142

Int. Cl.³ B25B *15/00*

U.S. Cl. 192—43 **10 Claims**



1. A tool-handle assembly comprising a handgrip having a tool-shank disposed for axial and rotative movement in a double-spring clutch carried thereby; said double spring clutch comprising two axially-aligned springs disposed in a chamber formed in the handgrip; and a connecting sleeve arrangement between the shank and the clutch springs and the handgrip and the clutch springs whereby selective axial movement of the shank will selectively actuate the clutch springs to apply torque to the tool shank in one direction and permit free-reversal in the opposite direction or will apply torque in both directions.

4,341,293

TORQUE-APPLYING, FREELY-REVERSIBLE TOOL AND DRIVE-HANDLE COUPLING WITH DIRECTION OF TORQUE-APPLICATION SELECTION

Ignacio Acevedo, 4066 Fenwick Rd., Columbus, Ohio 43220

Filed Nov. 21, 1980, Ser. No. 208,995

Int. Cl.³ F16D *41/20;* **B25B** *13/46*

U.S. Cl. 192—43 **14 Claims**

1. A torque-applying assembly having members for carrying a handle element and a tool element comprising a housing; means for operatively connecting said handle element and tool element carrying members comprising; a double-spring clutch in the housing with two axially-aligned springs, a tool drive-shank disposed within the spring clutch for axial and rotative

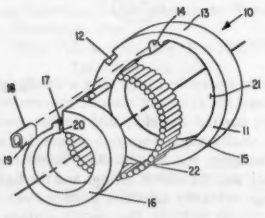
movement therein, a connecting and drive sleeve arrangement between the shank and the clutch springs comprising a plurality of axially-aligned drive sleeves disposed in abutting relationship within said springs, said shank carrying a drive portion thereon axially movable therewith into selective engagement with the sleeves to drive the shank, and means for selectively axially adjusting the shank to position said drive portion axially relative to said sleeves for driving the shank in the desired direction.

4,341,294

SPIRAL TYPE ONE-WAY CLUTCH ASSEMBLY

John H. Kerr, P.O. Box 40, Treasure Island, R.R. #1, Kingston, Ontario, Canada (K7L 4V1)

Continuation-in-part of Ser. No. 39,299, May 15, 1979, abandoned. This application Feb. 20, 1980, Ser. No. 123,064
Claims priority, application Canada, Feb. 20, 1979, 321941
Int. Cl.³ F16D *15/00, 41/06*
U.S. Cl. 192—45 **24 Claims**



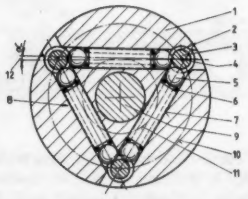
1. A spiral type one-way clutching mechanism comprising:
(a) a monolithic, annular outer body member including an inner spiral surface having at least one spiral segment defining an axially oriented opening through the outer body member;
(b) a concentrically mounted, monolithic inner body member positioned in said axially oriented opening, including an outer spiral surface having at least one spiral segment which is tangentially congruent to the inner spiral surface of said outer body member, said congruent inner and outer spiral surfaces defining a spiral race therebetween, one end of said spiral race defined in part by said outer spiral surface having an inner abutment provided by a radially outwardly extending protrusion or flange on said inner body member, the other end of said spiral race defined in part by said inner spiral surface having an outer abutment provided by a radially inwardly directed protrusion on said outer body member, at least one of said body members having a radially directed slit extending therethrough; said outer body member (a) and said inner body member (b) being relatively rotatably oscillatable with respect to each other;
(c) a plurality of axially oriented roller members positioned in said spiral race, substantially but not completely filling said spiral race, said roller members contacting said inner and said outer spiral surfaces and adapted to abut said inner abutment and said outer abutment when free-wheeling; and
(d) resilient limit means acting between said body members, for limiting relative oscillatory movement therebetween.

4,341,295

SYNCHRONIZING DEVICE

Manfred Freitag, Friedrichshafen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen A.G., Friedrichshafen, Fed. Rep. of Germany

Filed May 22, 1980, Ser. No. 152,158
Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2920970
Int. Cl.³ F16D *23/04*
U.S. Cl. 192—53 E **28 Claims**



1. A synchronizing device comprising a shift sleeve adapted to be mounted about a shaft, the shift sleeve including at least one hole transversely directed at least partially through the sleeve, and at least two substantially parallel holes in an axial direction through the sleeve, a ram being located in each of the axially directed holes in the shift sleeve, at least two pressure pieces in the transversely directed hole, one at each end of the hole, a pressure spring disposed in the hole between the pressure pieces and being substantially perpendicular to the rams, the pressure pieces meshing with a mating formation in the rams, thereby to limit the shift of the shift sleeve.

4,341,296

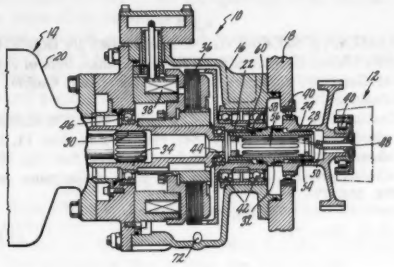
FLOW DIVIDER FOR LIQUID COOLANT OR LUBRICANT

James R. Schaefer, and Leland J. Radtke, both of North Palm Beach, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 22, 1980, Ser. No. 189,242
Int. Cl.³ F16D *13/74*
U.S. Cl. 192—113 B **3 Claims**

1. Apparatus for distributing a liquid to orifices about the interior of a rotating shaft, which comprises:
a cylindrical insert disposed at the interior of the shaft and rotatable therewith wherein the insert is open at one end and has a plurality of longitudinally extending slits therethrough, one each in alignment with a corresponding orifice to which distribution of the liquid is desired; and
a stationary nozzle at one end of the insert which is capable

of spraying said liquid into the interior of the insert through said open end for collection in the slits of the



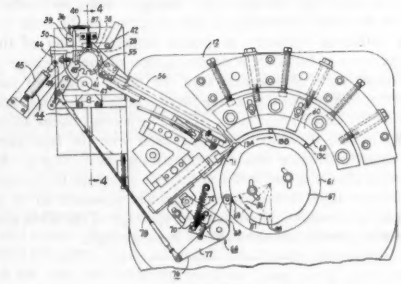
insert and subsequent distribution to the corresponding orifices.

4,341,297

FEED MECHANISM

David L. Turner, Parma, Ohio, assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed Aug. 27, 1980, Ser. No. 181,823
Int. Cl.³ B65G *29/00, 47/24*
U.S. Cl. 198—408 **17 Claims**



1. A feed mechanism to feed parts to a utilization machine, comprising, in combination,

a frame,

a motion changing magazine supported on said frame and having a plurality of wall means establishing elongated substantially parallel part pockets disposed side-by-side,

a guide supported relative to said frame to guide elongated parts substantially in the direction of the longitudinal axis of the parts and of said pockets,

drive means connected to relatively move said magazine and said guide in a direction transverse to the longitudinal dimension of said pockets with said pockets and said guide sequentially established at a loading position with an upstream end of each pocket in alignment with the downstream end of said guide,

said wall means having wall ends sequentially at the downstream end of said guide alternating with said pockets,

means urging any said part in said guide toward said magazine to be receivable in an empty pocket at said loading position and to be blocked by a wall end at said loading position,

feed means at the utilization machine having an intermittent part feed-in range in a 360 degree cycle,

means to supply parts side-by-side from said magazine to said feed means,

said feed means connected to feed parts sequentially into said utilization machine during said part feed-in range,

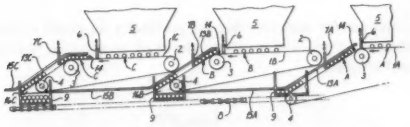
and means to actuate said drive means in substantial synchronism with said feed means to have at said loading position a pocket capable of receiving a part for a period of time substantially greater than the time of said feed-in range of the 360 degree cycle.

4,341,298

FORMING GROUPS OF ROD-LIKE ARTICLES

Paul Dingli, Winslow, England, assignor to Molins Limited, London, England

Filed Feb. 13, 1980, Ser. No. 121,335
Claims priority, application United Kingdom, Feb. 20, 1979, 7905951
Int. Cl.³ B65B *19/10*
U.S. Cl. 198—419 **8 Claims**



5. Apparatus for forming groups of rod-like articles, each group consisting of a plurality of superposed rows of articles, comprising:

(a) a conveyor movable along a substantially rectilinear path and comprising a series of group-receiving containers;

(b) means for driving said conveyor at a continuous speed;

(c) means defining a plurality of parallel passageways corresponding in number to said plurality of superposed rows to be formed, said passageways being disposed successively above said conveyor for passing articles transversely of their axes to said containers;

(d) each passageway having an inlet portion and an exit portion, said exit portion being inclined at an acute angle towards said conveyor in the direction of movement thereof;

(e) first feed means for intermittently feeding a required number of articles through said inlet portion of each respective passageway to form a row of said articles at a predetermined position in said passageway; and

(f) second feed means for feeding said row of the required number of articles through said exit portion of each respective passageway in timed relationship with the movement of said containers therebeneath, so that a row of articles is progressively formed in each said container as it sequentially passes each exit portion of a passageway.

4,341,299

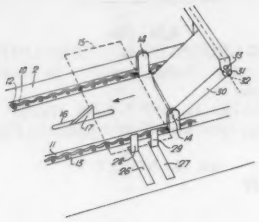
APPARATUS FOR PERFORMING OPERATIONS ON A STACK OF SHEETS

Roger Walker, Nantwich, and Alan Holdsworth, Broadstone, both of England, assignors to McCorquodale Machine Systems Limited, Basingstoke, England

Filed May 8, 1980, Ser. No. 147,788
Int. Cl.³ B65G *47/26*
U.S. Cl. 198—434 **7 Claims**

1. Sheet-conveying apparatus comprising stack-pushing means for engaging the trailing edge of a stack of sheets loaded on to a stationary conveyor track, a stack-aligning element movable between a first position in which it projects from the track so as to engage and align the leading edges of the sheets of a stack and a second position in which it is withdrawn below the track, and means for halting the stack-pushing means when the stack of sheets has been advanced along the track to a station at which an operation is to be performed on the stack, and further comprising mounting means positioning the stack-aligning element at the said station and comprising resilient means permitting yielding movement of the element in the direction of movement of the conveyor while the element is in its first position, so that the sheets are urged into alignment to

form a compact stack between the said resiliently mounted stack-aligning element and the stack pushing means, and means operating in timed relationship with further movement of the



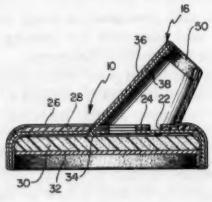
conveyor for withdrawing the resiliently mounted element to the second position to permit the stack to advance beyond the said station.

4,341,300

ARTICLE HOLDER AND METHOD OF MANUFACTURE THEREOF

Armand W. Roy, Plainville, Mass., assignor to Royal Hinge & Die Co., Inc., Plainville, Mass.

Filed Dec. 31, 1979, Ser. No. 109,461
Int. Cl.³ B65D *5/50*
U.S. Cl. 206—45.14 **5 Claims**



1. An article holder comprising:

a. a base member having a generally horizontal top wall with a plurality of slots formed therein in predetermined spaced apart relation;

b. at least one holder member mounted on said base member for receiving an article for display thereon, said holder member being formed of a metallic sheet material in generally upwardly tapered hollow tubular configuration with the lowermost edges thereof in substantially coplanar relation, said holder member being disposed with said lowermost edges in communication with said top wall and being shaped such that the longitudinal axis thereof is inclined with respect to the vertical;

c. a plurality of spaced apart prongs joined to said lowermost edges and received in said slots in said top wall and bent into engaging relation with the underside of said top wall to firmly lock said holder member on said top wall in an inclined position relative thereto;

d. a decorative covering secured to the exterior surfaces of said holder member;

e. a foam-like pad overlaid on the upper surface of said top wall; and

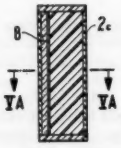
f. a decorative covering overlaid on said pad and secured to said base member, said decorative coverings providing an ornamental appearance for said holder member, said base member covering capturing said pad on said base member to provide a resilient top surface for said top wall, whereby said lowermost holder member edges are received on said covering on said top wall in cushioned relation and buried therein to produce a one-piece effect between said holder member and said base member.

4,341,301

ADHESIVE SECURING OF ANCHORS IN BOREHOLE

Frank Meyer, Essen, and Ingo Romey, Hünxe, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 887,319, Mar. 16, 1978, abandoned, which is a continuation of Ser. No. 758,542, Jan. 11, 1977, abandoned. This application Jun. 15, 1979, Ser. No. 49,045
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1976, 2641776
Int. Cl.³ B65D *25/08*
U.S. Cl. 206—219 **15 Claims**



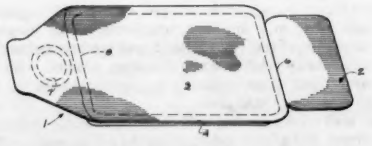
1. An adhesive cartridge for securing an object in a hole, comprising an elongated substantially rigid tubular envelope adapted for insertion into a hole and being of a material composed of thermoplastic synthetic resin and 50–80% by weight of a particulate filter therefor, said material being sufficiently brittle to facilitate shattering of the envelope in the hole but having sufficient elasticity to permit limited flexing of the envelope so as to facilitate accommodation of the envelope to a non-linear path of insertion into the hole; a mass of one component of a two-component adhesive in said envelope; and a mass of the other component of said two-component adhesive also in said envelope and juxtaposed with the first-mentioned mass to become mixed therewith on destruction of the envelope in the hole, said material also being opaque to prevent the access of light to said two-component adhesive so as to avoid polymerization and consequent spoilage of the same and thus to afford extended shelf-life to the cartridge.

4,341,302

STORING AND MIXING APPARATUS

Andrew J. Baker, and Alfred G. Baker, both of Glen Waverley, Australia, assignors to United Fillers Pty. Ltd., Melbourne, Australia

Filed Oct. 15, 1980, Ser. No. 197,123
Int. Cl.³ B65D *81/32, 1/36, 77/08*
U.S. Cl. 206—219 **6 Claims**



1. A tray for storage and mixing of individual material components, said tray comprising:

an upwardly open container bounded by side and end edges and including two or more depressions located within its edges, said depressions being adapted to respectively store individual material components for subsequent mixing with one another;

a flat paddle having intersecting edges along its periphery, said paddle being integrally formed as part of the container along one of its edges and being detachable from the

container along said one edge by a joining line of weakness;

one of said depressions having a cross-sectional configuration complementary to the configuration of the intersecting edges of the paddle;

whereby material within said one depression can be removed from it by a continuous movement of the paddle through the depression while said intersecting edges thereof engage the cross-sectional configuration of said depression complementary thereto.

4,341,303

FRANGIBLE STRIP OF CLIPS

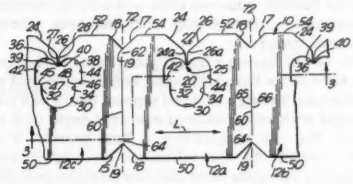
John P. Britt, Chelmsford, England, assignor to Pinna Corporation, Dallas, Tex.

Division of Ser. No. 957,672, Nov. 6, 1978, Pat. No. 4,215,606. This application May 9, 1980, Ser. No. 148,259

Claims priority, application United Kingdom, Nov. 21, 1977, 48432/77

Int. Cl.³ B65D *69/00, 83/08, 85/00;* **F16S** *1/08*

U.S. Cl. 206—343 **4 Claims**



1. A frangible strip of clips, the strip being essentially flat and of a plastics material, in which the entrance to the aperture of each clip is at a lateral edge of the strip, each successive clip of the strip being frangibly joined to next adjacent clips by a line extending between longitudinal edges of the strip, the improvement comprising a slit which is formed through the thickness of the material of the strip by shearing the material of the strip without removal of that material, said slit terminating inwardly of said longitudinal edges of the strip to form breaking portions which are substantially longitudinally coextensive with the slit, said slit and said breaking portions lying along said line, so there are no projections between the clips which could break at undesired or multiple positions.

4,341,304

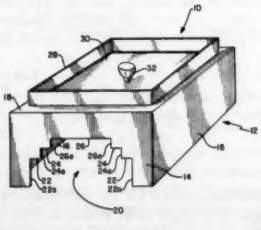
TOOL TRAY

Harold L. Diller, 3980 Highland Dr., Mogadore, Ohio 44260

Filed Oct. 10, 1980, Ser. No. 196,006

Int. Cl.³ B65D *43/00, 61/00*

U.S. Cl. 206—349 **9 Claims**



1. A tool tray assembly, comprising:

a base having top interconnecting front and back plates at opposite ends thereof, said front and back plates having aligned openings therein and said base being open at the bottom thereof;

a tray maintained upon said top; and

wherein said aligned openings decrease in width incrementally in steps from the bottoms of said openings to the tops thereof.

4,341,305

CONTAINER FOR STORING SHAVING BLADE UNITS

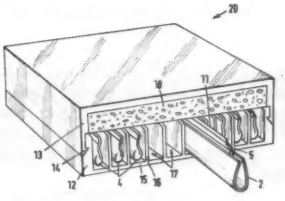
Erhard Schultz, Solingen, Fed. Rep. of Germany, assignor to Tondeo-Werk GmbH, Solingen, Fed. Rep. of Germany

Filed Sep. 3, 1980, Ser. No. 183,831

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936167

Int. Cl.³ B65D *83/10*

U.S. Cl. 206/356 **10 Claims**



1. A container for storing of shaving blade units each including an elongated blade having a coating and a cutting edge extending along a longitudinal face of the blade and a holding element embracing the blade at lateral sides of the latter, the storage container comprising a body portion having at least one elongated compartment having a length, a height and a width, said compartment having two ends spaced from one another in direction of elongation and an opening at one of said ends so that the shaving blade unit can be inserted into said compartment through said opening and a width of the blade extends in direction of the height of said compartment, the width of said compartment being such that in inserted condition of the shaving blade unit a small space remains in said compartment to the shaving blade unit in direction of the width of said compartment; and an abutment member limiting said compartment at its one side as considered in direction of its height, the height of said compartment being such that in inserted condition of the shaving blade unit the cutting edge of the blade at least abuts against said abutment member, and said abutment member being composed of such a material that during withdrawal of the shaving blade unit from said compartment the coating of the blade is removed from the cutting edge of the blade.

4,341,306

DISPOSABLE RAZOR PACKAGE

Martin F. Lightsey, Staunton, Va., assignor to American Safety Razor Company, Verona, Va.

Filed Mar. 26, 1980, Ser. No. 133,779

Int. Cl.³ B65D *75/58;* **A45D** *27/29*

U.S. Cl. 206—372 **6 Claims**

1. A hollow package for safety razors, each razor having a head and a handle, the package comprising:

front, rear and side panels articulated together;

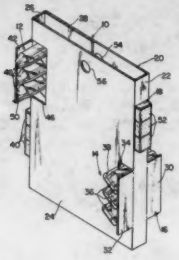
first means formed in the front and rear panels for securing the heads of a first plurality of razors therein;

second means formed in a first side panel, opposite the first means, for supporting the handles of the first plurality of razors therein;

third means formed in said front and rear panels substantially identical to and formed diammetrically opposite the first

means and adjacent said second means for securing the heads of a second plurality of razors therein; and

fourth means substantially identical to the second means and formed adjacent said first means in a second side panel, opposite the first side panel, for supporting the handles of



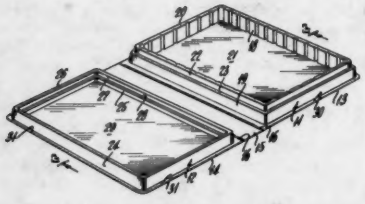
the second plurality of razors therein so that said second plurality of razors are in an opposite symmetrical relationship and vertically aligned with respect to said first plurality of razors to thereby provide symmetrically distributed weight relative to the central longitudinal axis of the package.

4,341,307

CONTAINER HAVING INTERLOCKING BASE AND CLOSURE

Richard H. Shyers, 343B Long Rd., Basking Ridge, N.J. 07920

Filed Aug. 18, 1980, Ser. No. 178,829
Int. Cl.³ B65D *1/34, 85/67*
U.S. Cl. 206—387 **6 Claims**



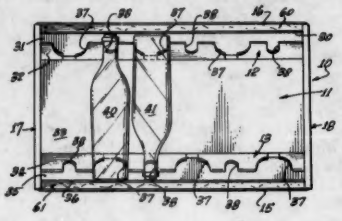
1. A container having a base and interlocking closure therefor, said container base comprising a bottom wall, a peripheral hollow side wall extending therefrom, said side wall having an inner peripheral wall portion and an outer peripheral wall portion joined by a flat outer face, said outer wall portion being stepped along a line spaced from said outer face forming an inwardly extending shoulder, said flat outer face and adjoining corners being of relatively heavy thickness with the wall of the stepped portion adjoining said shoulder being thinner than said outer face and said adjoining corners, said closure comprising a top wall and a peripheral hollow side wall extending therefrom, the last said side wall having an inner wall portion and an outer wall portion joined by a flat outer face, said inner wall portion being stepped near the edge thereof forming an inwardly extending shoulder, the last said flat outer face and adjoining corners being of relatively heavy thickness with the wall of the stepped portion adjoining the last said shoulder being thinner than the last said flat outer face and adjoining corners, the outer periphery of the first said flat outer face of said container base being substantially the same in size and configuration as the inner periphery of the flat outer face of said closure whereby said container base and closure will firmly interlock upon being pressed into engagement.

4,341,308

CONTAINER FOR BOTTLES

William G. Pasquini, 913 S. Maple St., Montebello, Calif. 90640

Filed Jul. 18, 1980, Ser. No. 170,133
Int. Cl.³ B65D *85/62, 81/02*
U.S. Cl. 206—427 **11 Claims**



1. An improved container for holding a plurality of bottles, said container being of the type typically fabricated from corrugated particle board and having a base with a generally rectangular bottom, sides and ends, and a cover member having a generally rectangular top, sides and ends, wherein the improvement comprises:

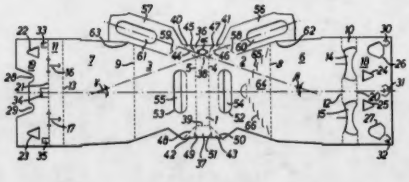
a bottle holder having a length about equal to the length of the sides of the base, said bottle holder being held on said bottom and having a first end support flap, a first platform integral with and positioned at a right angle with respect to the first end support flap, a first, inverted V-shaped bottle support member affixed at one edge thereof and extending upwardly from said first platform and affixed at its other edge to a center platform of the bottle holder, a second inverted V-shaped bottle support member affixed at one edge thereof and extending upwardly from the center platform and affixed at the other edge to a second platform and an end support flap integral with and positioned at a right angle to the second platform, said first and second inverted V-shaped bottle support members having a plurality of bottle support slots formed therein and wherein the combined width of the first platform, the center platform and the second platform is between 15% and 35% less than the width of the base, whereby spacer means may be inserted between said end support flaps and sides of the base to provide end support for the bottles placed in the bottle support members.

4,341,309

WRAP-AROUND CARRIER

James R. Oliff, Austell, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Oct. 6, 1980, Ser. No. 194,643
Int. Cl.³ B65D *65/00*
U.S. Cl. 206—429 **9 Claims**



1. A wrap-around carrier for accommodating a plurality of bottles arranged in a single row, which carrier is formed from a unitary blank of foldable material and comprises a bottom wall, opposing side walls extending upwardly from said bottom wall and inclined toward each other to generally conform to the upwardly tapered configuration of the bottles, a top

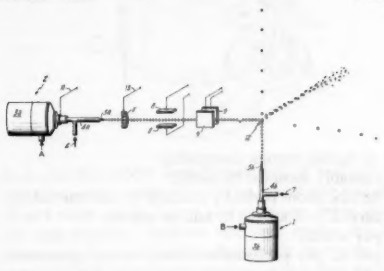
panel joined to the upper edges of said side walls and overlying the tops of the bottles, a reinforced hand-gripping aperture formed in at least one of said side walls below said top panel, said hand-gripping aperture being reinforced by at least one handle reinforcing panel hinged to said one side wall and folded inwardly into overlapping relationship therewith to provide extra material around said hand-gripping aperture, characterized in that said handle reinforcing panel is hinged to its respective side wall along a fold line extending obliquely with respect to the longitudinal and transverse axes of the blank from which said carrier is formed.

4,341,310

BALLISTICALLY CONTROLLED NONPOLAR DROPLET DISPENSING METHOD AND APPARATUS

Joseph J. Sangiovanni, West Suffield, and Raymond J. Michaud, Hampton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 3, 1980, Ser. No. 126,244
Int. Cl.³ B07C 9/00
U.S. Cl. 209—638 **7 Claims**



1. A process of accurately dispensing individual droplets of a nonpolar liquid comprising generating a continuous monodispersed stream of liquid droplets of nonpolar liquid, generating a continuous monodispersed stream of liquid droplets of a polar liquid, imposing a charge on each of the polar liquid droplets as they are formed, causing the stream of polar liquid droplets to intersect and collide with the stream of nonpolar liquid droplets prohibiting continuation of nonpolar liquid droplets on their precollision path, altering the precollision path of a predetermined number of polar liquid droplets by changing the charge on the preselected number of polar droplets to be different from the colliding polar droplets by using a pulsed, low DC voltage sufficient to allow passage of a corresponding number of nonpolar liquid droplets on their precollision path.

4,341,311

METHOD AND APPARATUS FOR SORTING RIVETS

Raymond D. Gold, Waukee; Robert A. Tufts, Bondurant, and Merle S. Schillerstrom, Des Moines, all of Iowa, assignors to Deere & Company, Moline, Ill.

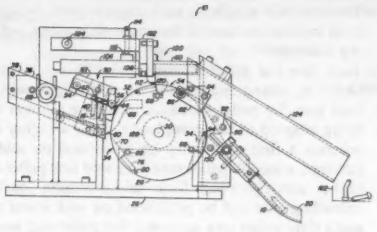
Filed Aug. 25, 1980, Ser. No. 180,775
Int. Cl.³ B07C 5/00
U.S. Cl. 209—644 **25 Claims**

1. A machine for sorting headed rivets or the like articles having straight, uniform shanks from those having irregular shanks comprising:

a movable gauging member defining an outer boundary and having gauging means for receiving articles with uniform shanks and permitting the article heads associated with the uniform shanks to extend within the boundary while maintaining article heads associated with non-uniform shanks outwardly of the boundary;

first means for guiding the articles toward the gauging member for receipt by the gauging means;

second means for removing to a first location the received articles with heads extending outwardly of the boundary;



third means for removing to a second location the articles with head extending within the boundary; and

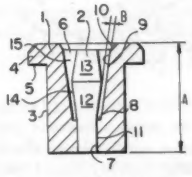
drive means for moving the gauging member.

4,341,312

HOLDER FOR SMALL INSTRUMENTS SUCH AS DENTAL INSTRUMENTS

Arno Scholer, Riederbachweg 7, 3292 Busswil, Switzerland

Filed Apr. 25, 1980, Ser. No. 143,777
Claims priority, application Switzerland, Apr. 30, 1979, 4023/79
Int. Cl.³ A61G 1/14; A47F 7/00
U.S. Cl. 211—60 T **7 Claims**



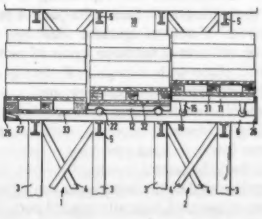
1. A holder for small instruments, comprising a holder body having therein an annular recess, the recess having an upper portion defined between side walls that converge downwardly and a lower portion defined between parallel side walls.

4,341,313

SHELVING FOR PALLETS

Erich Döring, Im Hölzeli, Berneck, Switzerland (9442)

Filed Jun. 29, 1979, Ser. No. 53,423
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1978, 2829325
Int. Cl.³ A47F 5/00
U.S. Cl. 211—151 **6 Claims**



1. Shelving for pallets in which compartments defined by a frame are continuous in side by side relation and on top of one

another and adapted to receive at least three pallets positioned on a plane which is inclined towards a common loading and unloading side of said frame, comprising:

at least one pair of rails, in each compartment, which extend at an inclination toward the common loading and unloading side; and

at least two flat pallet carriages of different heights positioned in rolling engagement on said pair of rails, said at least two flat pallet carriages including a lower carriage being adapted to roll completely under a higher carriage wherein a first pallet may be positioned on said higher carriage, a second pallet may urge said first pallet and said higher carriage away from said common loading and unloading side and be positioned on said lower carriage and a third pallet may urge said first pallet and said higher carriage and said second pallet and said lower carriage away from said common loading and unloading side and be positioned on said pair of rails.

4,341,314

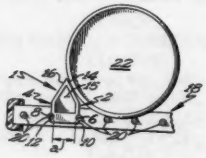
CONTAINER STOP DEVICE FOR REFRIGERATOR TRAYS

Richard E. Feuerstein, 3857 Van Dyke, White Bear Lake, Minn. 55110

Filed Jun. 16, 1980, Ser. No. 160,008

Int. Cl.³ A47F 5/00

U.S. Cl. 211—184 **8 Claims**



1. In combination with a refrigerator tray comprised of a plurality of parallel, laterally spaced rods, a stop device for restraining containers from movement on said tray comprising:

an upright stop member of sufficient height to bear against containers to be held in place, said stop member having opposed side walls;

a container contact surface on at least one of said opposed side walls of said stop member adapted to bear against stored containers said container contact surface being inclined at a predetermined angle to provide substantially tangential contact with the curvilinear side walls of a round container and thereby preventing rolling displacement of such a container on the refrigerator shelf;

an elongated recess in each of said opposed side walls of said stop member, said recesses being in horizontal alignment with each other and sized to receive the rods of said refrigerator shelf in snug engagement therewith, and said recesses being laterally spaced apart a predetermined distance substantially corresponding to the distance between the adjacent surfaces of a pair of parallel, laterally spaced rods of said refrigerator shelf, and said stop member being positioned between a pair of such shelf rods and locked in place with said pair of rods in snug, frictional engagement within said recesses; and

each of said side walls having a lowermost side wall segment extending below said recesses, said lowermost side wall segments being spaced apart by a predetermined width greater than the lateral spacing between said recesses and greater than said distance between the adjacent surfaces of said pair of parallel, laterally spaced rods of the refrigerator shelf, and said lowermost side wall segments extending downwardly between said pair of said refrigerator shelf rods to a position therebelow and retained below said rods with said rods engaged within said recesses to assist in holding said stop member in place.

4,341,315

MARINE DERRICK ARRANGEMENT

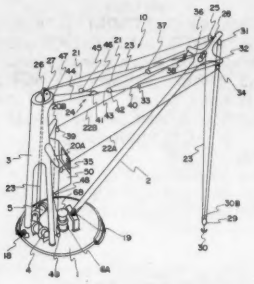
Tsiung-Siung Tseng, Room 707, 3-4-28, Sakurazara, Chuoku, Fukuoka City 810, Japan

Filed Oct. 11, 1979, Ser. No. 83,833

Claims priority, application Japan, Nov. 30, 1978, 53/149308

Int. Cl.³ B66C 23/60, 23/52

U.S. Cl. 212—193 **3 Claims**



1. A marine derrick comprising

a rotatably mounted turntable,

a derrick boom pivotally attached to said turntable,

a derrick post affixed to said turntable,

a guy winch,

a pair of guy pendants entrained on said guy winch, each guy pendant being connected to said derrick boom for slewing said derrick boom relative to said turntable,

a motor,

means including a driveshaft for interconnecting said motor and said guy winch,

means including gear means for interconnecting said driveshaft and said turntable such that operation of said motor produces slewing movement of said derrick boom relative to the turntable superposed on rotating movement of the turntable,

a topping lift winch on the turntable with a topping lift wire passing over the derrick post and being connected to the derrick boom,

a cargo winch on the turntable with a cargo fall passing over the derrick post and the derrick boom,

power cable means including a power cable and a ring-shaped cable holder concentric to the turntable fixedly mounted around the outer periphery of the turntable and having means forming an annular recess for receiving the power cable in coiled condition around the turntable, and

a tension type winding drum mounted on the turntable and adapted to wind and unwind the power cable in said cable holder, one end of the power cable being held on the drum and being connected to the topping lift and cargo winches on the turntable.

4,341,316

INSULATING VESSEL

John M. Bunge, 5 Melton Ct., Old Brompton Rd., London S.W. 7, England

Filed Apr. 28, 1980, Ser. No. 144,657

Claims priority, application United Kingdom, May 29, 1979, 7918567

Int. Cl.³ B65D 6/10

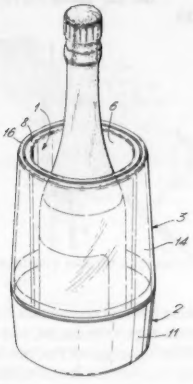
U.S. Cl. 215—13 R **7 Claims**

1. An insulating vessel for a wine bottle, comprising:

an outer jacket comprising a bottom wall and a continuous upstanding cylindrical side wall means; and

a container member disposed internally of said outer jacket and spaced therefrom so as to define a space therebetween, said container member comprising a bottom wall and a continuous upstanding cylindrical side wall means defining a cavity therewithin so as to snugly receive therein a wine bottle,

the upper portion of said side wall means of said outer jacket



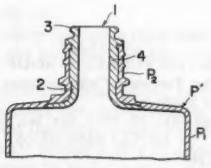
at an elevation above said bottom wall of said container being transparent while the portion of said side wall means of said outer jacket below said elevation being opaque, and said container member side wall means also being transparent, so as to enable substantially the entire height extent of said wine bottle disposed within said container cavity to be seen within said container cavity from a reference point outside said insulating vessel.

4,341,317

BIAXIALLY ORIENTED BOTTLE OF SATURATED POLYESTER RESIN

Sadao Suzuki; Harumi Kinoshita; Takuzo Takada, and Fumio Negishi, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Japan

Filed May 9, 1980, Ser. No. 148,388
Int. Cl.³ B65D *25/42*
U.S. Cl. 215—31 **2 Claims**



1. A biaxially oriented, blow molded bottle of saturated polyester resin, which comprises:

a body having a threaded neck and a shoulder portion, said neck having an upper end;

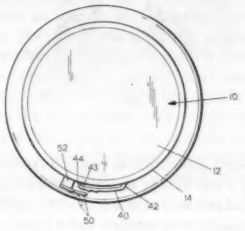
a mouthpiece snugly fitted to the inside of the neck, said mouthpiece having an upper flange which overlies the upper end of the neck, said mouthpiece being from an injection molded synthetic resin and having a length sufficient to extend from the neck to the shoulder portion of the bottle, said mouthpiece having an oriented lower portion and an intermediate portion, said lower portion being reduced in thickness relative to said intermediate portion.

4,341,318

CLOSURE WITH CHILD-RESISTANT TAMPER-PROOF BAND

Ned J. Smalley, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 23, 1981, Ser. No. 246,814
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—225 **5 Claims**



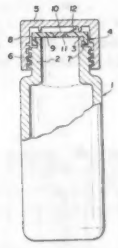
1. A child-resistant, tamper-proof closure comprising a panel section; an annular skirt depending from the periphery of said panel, the lower portion of said skirt including a tamper-proof band removably attached to the remainder of said skirt; means on said tamper-proof band for engaging the finish of an associated container to prevent removal of the closure while the tamper-proof band is attached to the remainder of the closure, grasping means on said skirt to facilitate removal of said tamper-proof band; and shield means integrally formed with said closure for normally preventing access to said grasping means, said shield means being manipulable to permit such access.

4,341,319

VIRGIN SEALED INNER CLOSURE CAP

Hirotake Ogasawara, Funabashi, Japan, assignor to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,612
Int. Cl.³ B65D *41/34*
U.S. Cl. 215—307 **4 Claims**



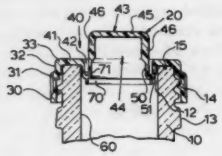
1. A virgin sealed inner closure cap for a small container adapted to be tightly fitted to an open mouth in the neck of said container and covered by an outer closure cap engageable with the outer periphery of said neck, said inner closure cap comprising a base cap member made of one thermoplastic resin for fitting to said open mouth in the neck of said container and provided with a pour-out hole through the upper end wall thereof and a plug member removably fitted to said pour-out hole and having a holding tongue thereon, wherein said plug member is made of another thermoplastic resin, which has no chemical affinity with that of said base cap member, and lightly attached to said base cap member to cover said pour-out hole by pressing said plug member against said base cap member while said plug member is molten by heating.

4,341,320

TAMPERING INDICATING BOTTLE CAP AND BOTTLE

Sidney M. Libit, 441 Lake Side Ter., Glencoe, Ill. 60022

Filed Oct. 3, 1980, Ser. No. 193,810
Int. Cl.³ B65D *41/28*
U.S. Cl. 215—341 6 Claims



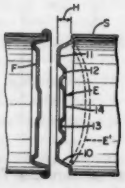
1. A molded plastic bottle cap and bottle neck combination comprising a cap having an outer peripheral axially extending skirt, an axial end wall at one end of the skirt, the axial end wall having a radially outer portion and a radially inner portion, the radially inner portion being connected to the radially outer portion through a convolution band being convoluted in the direction of the extension of the skirt from the axial end wall, the radially inner portion being movable from a first position projecting above the radially outer portion to a second position substantially coplaner with an axial outer face opposite the projection of the skirt of the radially outer portion, the convolution band being formed of yieldable material, a bottle neck adapted to receive the cap, said cap having a first stable position at the second position when fully attached to said bottle neck and seated thereon after forced movement from the first position to the second position subsequent to attachment to the bottle neck and a second stable position at the first position when attached to said bottle neck and seated thereon prior to said forced movement.

4,341,321

CAN END CONFIGURATION

Laszlo A. Gombas, Rte. 7, Box 555Q, Evergreen, Colo. 80439

Continuation-in-part of Ser. No. 931,124, Aug. 4, 1978, Pat. No. 4,199,073. This application Apr. 8, 1980, Ser. No. 138,856
Int. Cl.³ B65D *6/34, 8/04, 8/06*
U.S. Cl. 220—66 14 Claims



1. An end closure for a container, wherein the container has a cylindrical side wall and the end closure is adapted to close an axial end of the side wall, said end closure comprising:

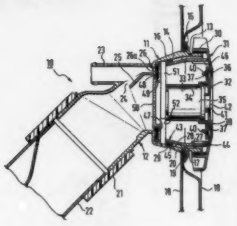
an end panel of malleable material and having a generally dome-shaped configuration extending convexly axially beyond the cylindrical side wall, characterized by a biaxial forming stress condition in the compositional material of the end panel, wherein one stress axis is longitudinally parallel to the central axis of the dome-shaped configuration of the end panel and the second axis is circumferential to the first axis.

4,341,322

FILLING CONNECTION FOR VEHICLES DRIVEN BY INTERNAL COMBUSTION ENGINES

Horst Heinke, Hamburg, Fed. Rep. of Germany, assignor to ITW Ateco GmbH, Norderstedt, Fed. Rep. of Germany

Filed Jun. 5, 1980, Ser. No. 156,842
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2922611
Int. Cl.³ B65D *55/14*
U.S. Cl. 220—210 9 Claims



1. In combination a filling connection for vehicles driven by internal combustion engines and a lid, said connection adapted to be fastened in an opening of the car body and includes a section extending beyond the inner surface of the car body adapted to be connected to a line leading to the fuel tank, while a second section disposed on the outer surface is provided with fastening means onto which said lid may be adjustably attached, and an axially effective sealing means is arranged between said lid and said second section, characterized in that the lid (31) comprises a vented hollow axial projection (43) extending into the filling connection (10) and having a bar (51, 52) movably supported therein which is capable of being adjusted between a retracted and an extended position transversely of the axis of the projection (43) by means of a closure device (35) arranged inside the projection, and a plurality of axially extending circumferentially spaced tooth means (29) arranged on the inner surface of the filling connection (10) and having a substantial axial extent but spaced from the opening thereof with which the bar (51, 52) cooperates when in the extended position, whereby said lid can be axially adjusted relative to said second section through a variety of positions and locked in each such position.

4,341,323

SEAL FOR FLOATING ROOF TANKS

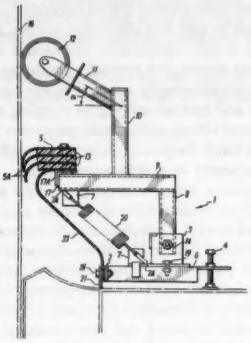
Jacques C. Kerby, Torrance, Calif., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 10, 1981, Ser. No. 242,215
Int. Cl.³ B65D *88/46*
U.S. Cl. 220—224 9 Claims

1. In a floating roof tank having a vertical wall and containing a relatively volatile liquid, a buoyant roof floating on said relatively volatile liquid and extending to the vicinity of the interior of said vertical wall, a dependent sealing element extending downwardly from the periphery of the upper surface of said roof to engagement with said vertical wall, an auxiliary seal mounted on the periphery of the upper surface of said roof and spaced above said dependent sealing element, thereby defining a vapor space between said dependent sealing element and said auxiliary seal, a closure means connecting said upper surface of said roof with said auxiliary seal, thereby substantially preventing leakage from said vapor space,

the improvement wherein said auxiliary seal is mounted on said roof by a spring-tensioned bracket means having attached thereto, but spaced above said auxiliary seal, a

rolling means in contact with said wall, spring means of said spring-tensioned bracket means urging said rolling



means and said auxiliary seal into contact with the interior of said vertical wall.

4,341,324

BOWL AND COVER ASSEMBLY

Richard L. Ramirez, Whittier, Calif., assignor to Dolco Packaging Corporation, Sherman Oaks, Calif.

Filed Jul. 9, 1980, Ser. No. 166,884
Int. Cl.[3] B65D *41/18, 43/10, 21/02*
U.S. Cl. 220—306 4 Claims

1. A bowl and cover assembly formed from plastic foam material comprising:

a bowl comprising

a bottom,

an upper annular rim,

upwardly extending side walls rising from the margin of the bottom and terminating in the upper annular rim, and

an integrally formed annular sealing lip attached to and depending radially outwardly from the upper annular rim and joined thereto at a single annular hinge region about which the annular sealing lip is resiliently pivotal,

the annular sealing lip having a single annular top sealing surface and a single annular edge sealing surface depending downwardly from the top sealing surface and defining the outermost peripheral edge of the annular sealing lip; and

a cover comprising:

a domed panel having a downwardly extending peripheral flange thereabout, and

an integrally formed annular skirt depending generally outwardly and downwardly from the peripheral flange for defining an upwardly facing annular skirt shoulder around the outside surface of the cover and an inwardly facing annular heel at the junction between the peripheral flange and the annular skirt, the annular skirt comprising an upper laterally depending portion having a laterally disposed down facing mating surface, and a lower downwardly depending portion having an annular inwardly facing mating surface,

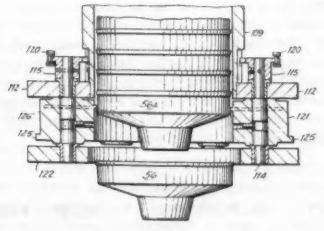
the down facing mating surface adapted for contacting the top sealing surface of the bowl and the edge sealing surface adapted for contacting an annular portion of the inwardly facing mating surface for forming an airtight seal between the bowl and the cover when the annular skirt of the cover is placed over the annular sealing lip of the bowl wherein said annular heel is moveable radially outwardly along the top sealing surface for pressing down on the top sealing surface to break the seal between the down-facing mating surface and the top sealing surface and to simultaneously break the seal between the edge sealing surface and the inwardly facing mating surface by forcing the annular skirt outwardly when the domed panel of the cover is depressed by a depression force, the seal between the annular skirt and the annular sealing lip reforming when the depression force is removed to create a partial vacuum in the covered bowl.

4,341,325

APPARATUS FOR DISPENSING SUBSTANTIALLY RIMLESS ARTICLES

Loren L. Lowdermilk, Middletown, N.J., assignor to International Paper Company, New York, N.Y.

Continuation of Ser. No. 936,838, Aug. 25, 1978, abandoned, which is a division of Ser. No. 732,706, Oct. 15, 1976, Pat. No. 4,135,347. This application Sep. 29, 1980, Ser. No. 192,346
Int. Cl.[3] B65G *59/06;* B65H *3/08*
U.S. Cl. 221—211 11 Claims



7. An apparatus for sequentially separating and discharging a substantially rimless article having a substantially cylindrically walled portion from a nested stack of said articles, the apparatus comprising:

(a) a sleeve for containing a stack of said articles;

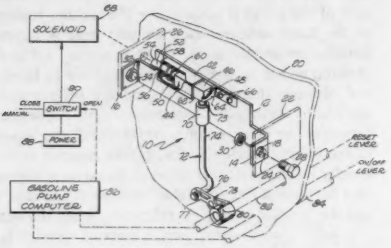
(b) a plurality of rotatively mounted article feeding and retaining members positioned around the discharge end of said sleeve, said members comprising a plurality of cylindrical means, each having its major axis substantially parallel to and displaced from the major axis of said article stack, and each said cam having two axially displaced partially angularly overlapping, discontinuous cam lobes of different radial projection, said lobes comprising a first lobe for engaging the substantially cylindrically walled portion of the article in said stack next to the article to be discharged, and a second lobe for engaging the article to be discharged; and

(c) means for rotating each of said article feeding and retaining cams so that the article to be discharged may be sequentially separated from said stack and discharged.

4,341,326
GASOLINE PUMP RESET LEVER LOCK APPARATUS

Sergio M. Bravo, 1823 N. Hill Dr., So. Pasadena, Calif. 91030

Filed Feb. 4, 1980, Ser. No. 118,293
Int. Cl.³ B67D 5/26
U.S. Cl. 222—32 9 Claims



1. A fluid pump meter reset lock apparatus for use in a fluid pump assembly having a housing, a pump mounted in the housing, a meter apparatus mounted in the housing and interconnected to the pump for measuring the quantity of fluid pumped by the pump, an actuating lever apparatus for turning the pump on and off, and a reset lever apparatus having a reset lever and a reset axle rotatable in response to rotation of the reset lever for resetting the meter apparatus, the fluid pump meter reset lock apparatus comprising:

a mounting bracket for being mounted within the fluid pump assembly;

a plunger apparatus mounted to the mounting bracket having a plunger which is controllably moveable to a locked position and to an unlocked position;

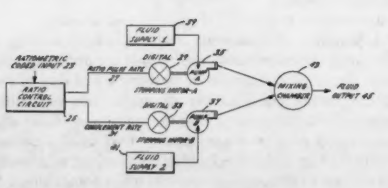
a reciprocating link member having a leg portion movably attached to the mounting bracket and a base portion attached to one end of the leg portion, the other end of the leg portion positioned for encountering the plunger only when the plunger is in the locked position; and

a rotatable crank member having a first end fixed to the reset axle whereby the crank member is rotated when the reset lever is rotated and further having a second end rotably attached to the base portion of the reciprocating link member whereby the plunger apparatus prevents the reset lever from being rotated to reset the pump meter when the plunger is in the locked position.

4,341,327
DIGITAL PROPORTIONAL METERING PUMPING SYSTEM

Vernon Zeitz, 4 Plain Hill Rd., Springfield, Vt. 05156

Filed Feb. 28, 1980, Ser. No. 125,339
Int. Cl.³ B67D 5/08
U.S. Cl. 222—63 9 Claims



1. A fluid metering apparatus comprising:

a first means for dispensing a first fluid;

a second means for dispensing another fluid;

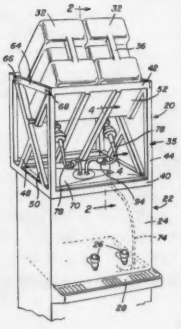
means, associated with said first and second dispensing means, for combining said first and second dispensed outputs; and

digital means for individually and simultaneously controlling the operation of said first and second dispensing means, said digital control means providing a metered ratio of said first dispensed output to total dispensed output and including a first digital stepping motor operatively connected to said first dispensing means, a second digital stepping motor operatively connected to said second dispensing means, and control circuit means for individually and simultaneously controlling the operating states of said first and said second digital stepping motors wherein said control circuit means includes means for providing a series of fixed frequency pulses, means for dividing the pulse frequency in evenly spaced pulses, said frequency divider means being connected to said pulse providing means for providing a divided down output, and means, connected to said frequency divider means, for steering a first portion of said divided down frequency output pulses to a first path while simultaneously steering a second portion of said divided down frequency output pulses to a second path, wherein said first path connects to said first digital stepping motor and said second path connects to said second digital stepping motor.

4,341,328
ADAPTER FOR BOTTLED WATER DISPENSER

Richard W. Redick, Jr., Apt. B-14, 6166 Leesburg Turnpike, Falls Church, Va. 22044

Filed Jan. 30, 1980, Ser. No. 117,840
Int. Cl.³ B67B 7/24
U.S. Cl. 222—83.5 5 Claims

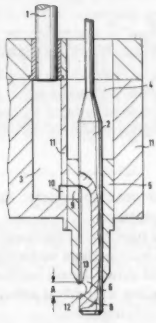


1. In combination with a liquid dispenser of the type having a reservoir and discharge spigot means communicating therewith, at least one disposable container, an adapter enabling the disposable container to be used with the liquid dispenser, said adapter comprising container support structure adapted to be supported from the dispenser to directly support the container above the reservoir, a reservoir closure means for sealing the reservoir against entry of ambient air, and means connecting the reservoir with the container for enabling gravity flow of liquid from the container to the reservoir through the closure means without the liquid coming into contact with ambient air, said connecting means including a connector insertable into an enclosed area communicated with the container, said closure means for the reservoir includes a resilient stopper telescoped into the reservoir and secured in sealed relation thereto, said means connecting the reservoir with the container includes a tube having one end extending through said stopper in a direct sealed relation thereto, the other end of said tube terminating in a pointed end penetrating into the interior of the container in sealed relation thereto, said support structure includes a tray between the reservoir and the container with the tube extending therethrough in sealed relation, said tray including an inclined bottom having a drain fitting at its lowest point to drain any leaked liquid into a catch basin on the dispenser.

4,341,329
DISPENSING APPARATUS FOR ASEPTIC MEASUREMENT AND FILLING OF A FLUID PRODUCT

Helmut Kuemmerer, Nellmersbach; Theo Moser, Steinenberg, and Adolf Genstorfer, Althuette, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 13, 1980, Ser. No. 149,227
Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921236
Int. Cl.³ G01F *11/02*
U.S. Cl. 222—275 4 Claims



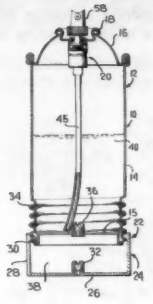
1. A dispensing apparatus for aseptic measurement and filling of a container with a fluid product which may include solid components, including a housing with first and second side-by-side vertically disposed parallel bores, said first bore comprising a dispensing chamber for said fluid product and said second bore including a supply chamber, an opening between said dispensing chamber and said supply chamber, a tubular element supported in said supply chamber, a control slide slidably supported in said tubular element for reciprocating movement between an uppermost position and a lowermost position, a reciprocable piston in said bore of said dispensing chamber, said control slide further including a longitudinally extending groove-like recess, an aperture in said tubular element at the same elevation and in alignment with said opening between said dispensing chamber and said supply chamber extending to said groove-like recess, said groove-like recess disposed in a sidewall of said control slide and cooperating with said tubular element to define a flow passsage so that when said control slide is in its uppermost position, a fluid connection is made between said supply chamber and said dispensing chamber and when said control slide is in its lowermost position, said groove-like recess connects said dispensing chamber with a container positioned to receive fluid conducted from said dispensing chamber by way of said flow passage.

4,341,330
AEROSOL CONTAINER

Carmen T. Mascia, Clarendon Hills, and Gary K. Hasegawa, Chicago, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Filed Oct. 6, 1978, Ser. No. 949,304
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—401 5 Claims

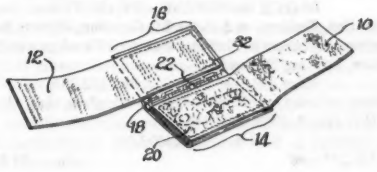
3. For use in an aerosol container, a dispensing valve mechanism comprising a supply passage for receiving a product to be dispensed under pressure, a dispensing valve member in said supply passage for selectively controlling the dispensing of a product, and automatic shutoff means responsive to low pressure in said supply passage, said automatic shutoff means being disposed in said supply passage upstream of said dispensing valve member and including a spring loaded disc valve member for closing said supply passage to said dispensing valve member in response to low pressure in said supply passage.



4,341,331
ARTICLE HOLDER

Patrick P. McDougall, 6305 Mt. Ainsworth, San Diego, Calif. 92111

Filed Jul. 27, 1981, Ser. No. 286,797
Int. Cl.³ A45F *5/00*
U.S. Cl. 224—219 8 Claims



1. A hook-and-loop type article holder comprising:
(a) a length of hook material having a hooked face and a fabric back;
(b) a length of loop material having a looped face and a fabric back;
(c) said lengths being arranged parallel, facing substantially the same direction, and with mutually longitudinally overlapping proximal end portions; and
(d) a hinge means fastening the adjacent edges of said proximal end portions and defining a hinge line such that said lengths can be rotated about said hinge line into face-to-face hook-and-loop engagement to capture an article therebetween, and the distal ends of said lengths can be wrapped around a member such as a wrist or ankle and engaged in face-to-face hook-and-loop engagement.

4,341,332
STANCHION ASSEMBLY

Daniel J. Kowalski, Ortonville, and Ray G. Mareydt, Warren, both of Mich., assignors to Four Star Corporation, Troy, Mich.

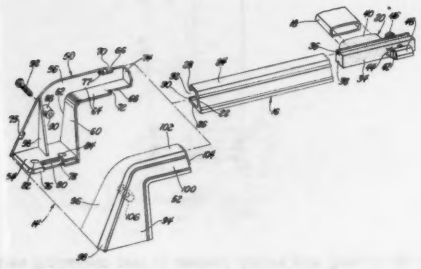
Filed Dec. 29, 1980, Ser. No. 220,229
Int. Cl.³ B60R *9/04*
U.S. Cl. 224—326 10 Claims

1. A stanchion for an article carrier of the type including a first section adaped to be secured to a vehicle surface and a second section adapted to be secured to said first section to form a hollow and enclosed stanchion, the improvement comprising:
(a) the first section including a base, first wall means extend-

ing upwardly from not more than one-half of the periphery of said base and leaving the remaining portion of said base periphery unenclosed by said first wall means;

(b) means for securing said base to said vehicle surface;

(c) the second section including second upstanding wall means having a lower periphery corresponding in shape



and extent to that portion of the base periphery unenclosed by said first wall means; and

(d) means for detachably joining said first and second sections to form a hollow stanchion whereby said first and second wall means entirely enclose the base of said first section.

4,341,333

BLOCK HANDLING APPARATUS

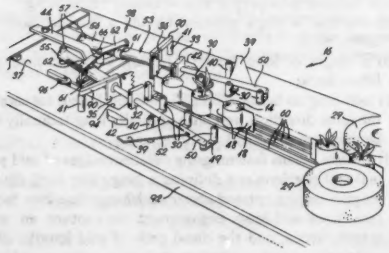
Walter Boa, Bedford, and Peter M. Grundon, Flitton, both of England, assignors to National Research Development Corporation, London, England

Filed Jul. 30, 1980, Ser. No. 173,741

Claims priority, application United Kingdom, Aug. 3, 1979, 7927197; Jun. 3, 1980, 8018140

Int. Cl.³ B26F *3/02*

U.S. Cl. 225—96 **12 Claims**



1. Apparatus for handling a plurality of spaced growing blocks linked together by substantially flat strips to form a bandolier, said apparatus comprising: detachment means sequentially operable to detach a growing block from an end of said bandolier; at least one gripper element mounted on support means which are selectively movable to bring said gripper element into engagement with a strip of said bandolier to move the end of said bandolier in a path towards the detachment means in an incremental step, and to move the gripper element out of engagement with the strip, said support means having a component of movement perpendicular to the bandolier's path to bring the gripper element into and out of contact with the strip and being telescopically movable with a component of motion parallel to the bandolier's path to step the bandolier towards the detachment means whereby each sequential operation of the detachment means detaches a single growing block from the end of the bandolier.

4,341,334

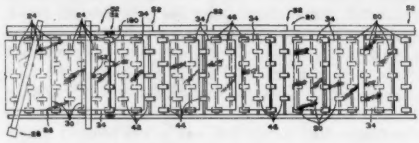
APPARATUS FOR SPACING SHEETS AND MOVING GROUPS OF SPACED SHEETS

David A. Bier, Houston, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 968,335, Dec. 11, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,741

Int. Cl.³ B26F *3/00*; B65H *35/04, 35/10*

U.S. Cl. 225—96.5 **11 Claims**



1. Apparatus for spacing articles and moving groups of spaced articles, comprising:

conveying means having an upstream section, a downstream section and an intermediate section between said upstream section and said downstream section;

means for advancing individual articles onto said upstream section at a receiving speed;

first motor means to drive said upstream section at the receiving speed, to accelerate said first section from the receiving speed toward a speed greater than the receiving speed defined as a spacing speed, to decelerate said first section to the receiving speed and to accelerate said first section to a discharge speed greater than the receiving speed;

second motor means to drive said intermediate section at the receiving speed, to accelerate said intermediate section to the spacing speed, to decelerate said intermediate section to the receiving speed and to accelerate said intermediate section to the discharge speed;

third motor means to drive said downstream section at the receiving speed, to accelerate said downstream section to the spacing speed, to decelerate said downstream section to the receiving speed and to accelerate said downstream section to the discharge speed;

means responsive to an article advancing onto said upstream section for (1) acting on said first motor means to drive said upstream section at the receiving speed to receive an article from said advancing means, to accelerate said upstream section toward the spacing speed to maintain spacing between articles on said upstream section and provide a spacing between a most recent article moved onto said upstream section and next article to be moved onto said upstream section from said advancing means, and to decelerate said conveying means to the receiving speed to maintain spacing between articles in group being accumulated on said upstream section and receive an article onto said upstream section from said advancing means to increase the number of spaced articles in the group being accumulated and (2) acting on said first motor means to accelerate said upstream section to the discharge speed when the group of spaced articles has been accumulated on said conveying means to advance the group from said upstream section onto said intermediate section and to maintain said upstream section at the discharge speed at least until last article of the group has moved from said upstream section;

said acting means responsive to an article advancing from said upstream section onto said intermediate section to act on said second motor means to drive said intermediate section at the receiving speed, to accelerate said intermediate section toward the spacing speed, and to decelerate

said downstream section to the receiving speed in unison with said upstream section when at least one article of the group being accumulated is on said intermediate section and to accelerate said intermediate section to the discharge speed and to maintain said intermediate section at the discharge speed as long as at least one of the articles of the accumulated group of spaced articles is on said intermediate section; and

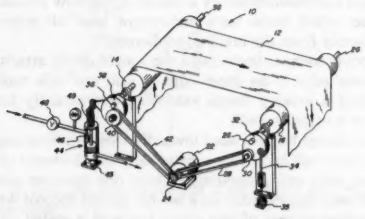
said acting means responsive to an article advancing from said intermediate section onto said downstream section to act on said third motor means to drive said downstream section at the receiving speed, to accelerate said downstream section to the spacing speed and to decelerate said downstream section to the receiving speed in unison with said intermediate section when at least one article of the group being accumulated is on said downstream section and to accelerate said downstream section to the discharge speed and to maintain said downstream section at the discharge speed as long as at least one article of the accumulated group of spaced articles is on said downstream section.

4,341,335

METHOD AND APPARATUS FOR CONTROLLING TENSION IN A MOVING MATERIAL

Franz J. Schmid, Moore, S.C., assignor to Sistig Corporation, Spartanburg, S.C.

Filed Oct. 7, 1980, Ser. No. 194,754
Int. Cl.³ B65H *23/08, 59/00*
U.S. Cl. 226—195 **19 Claims**



1. Apparatus for longitudinally conveying an indefinite length of material in a desired path of travel while imposing a desired constant tension thereon comprising:

first and second positively driven feed rollers located in axially fixed, spaced relation to engage and convey the material in a path of fixed length therebetween,

means for rotatably driving said rollers at desired rates of speed, and

constant pressure means associated with said roller driving means for imparting a constant torque to one of said rollers to impose a corresponding tension on said material in its path between said rollers and to increase or decrease the speed of rotation of said one roller in response to longitudinal contraction or extension of the material in its fixed length path between said rollers.

4,341,336

DIMPLER ATTACHMENT AND IMPROVED FASTENER DRIVING TOOL

Gareth J. Smith, 15533 Tupper St., Sepulveda, Calif. 91343

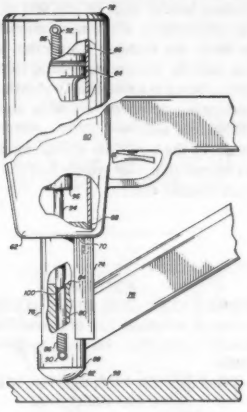
Filed May 12, 1980, Ser. No. 148,687
Int. Cl.³ B25C *1/04, 7/00*
U.S. Cl. 227—66 **10 Claims**

1. An improved dimpler attachment for a fastener driving tool, said attachment comprising, in combination:

(a) a dimpler head defining a curved dimple-forming front end, a central passageway, extending longitudinally rearwardly from said front end and an expanded pocket communicating with the rear end of said passageway;

(b) an elongated driver slidable within said passageway and extendable from the said front end to drive a fastener into a substrate, the rear end of said driver bearing means connectable to the driving piston of a fastener driving tool;

(c) resilient stop means connected to said driver and diametrically dimensioned to fit into said pocket but larger than



said passageway to limit forward movement of said driver and transmit dimpling force to said head;

(d) said resilient stop means comprising releasable locking means to lock the driver with said dimpler head;

(e) slide means slideably connected to said head and connectable to a fastener driving tool to permit reciprocation of said head external of said tool;

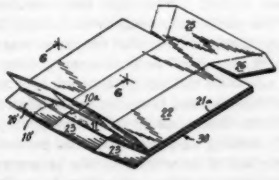
(f) fastener magazine means connected to said head and connectable to a fastener driving tool to facilitate said reciprocation.

4,341,337

POLYGONAL PAPERBOARD DRUM

Ralph L. Beach, Jr., Convent Station, N.J., and William R. Fuson, Wilmington, Del., assignors to International Paper Company, New York, N.Y.

Continuation of Ser. No. 848,619, Nov. 4, 1977, Pat. No. 4,166,567, which is a continuation of Ser. No. 692,435, Jun. 3, 1976, abandoned. This application Apr. 20, 1979, Ser. No. 31,775
The portion of the term of this patent subsequent to Sep. 4, 1996, has been disclaimed.
Int. Cl.³ B65D *5/35, 13/00*
U.S. Cl. 229—23 BT **8 Claims**



1. A polygonal paperboard container, which comprises:

a one-piece, upstanding, generally tubular, reinforcing member having at least six, foldably connected, substantially rectangular, upstanding, reinforcing flaps, arranged in a row; and

a one-piece body member having two sets of at least three, substantially rectangular, foldably connected, upstanding side wall panels, arranged in a row, and a one-piece polygonal bottom panel of at least four sides, connected along its opposite sides to the central side wall panel of each set of side wall panels;

the sets of side wall panels being located on opposite sides of the tubular reinforcing member and the side wall panels being bonded to the reinforcing flaps;

the upstanding lateral sides of the sets of side wall panels being in substantially abutting relationship but not overlapping about the foldable connection between reinforcing flaps, and the upstanding lateral sides of the reinforcing member being in substantially abutting relationship but not overlapping about the foldable connection between side wall panels; and

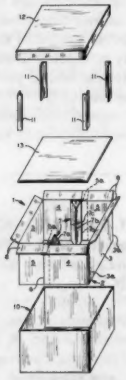
the side walls of the container consisting essentially of only the two sets of side wall panels and the reinforcing flaps which are bonded thereto.

4,341,338

CORRUGATED BOX BULK MATERIALS

Emmons S. Arnold, deceased, late of Grove City, Ohio (by Bonnie K. Arnold, executrix), assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 23, 1980, Ser. No. 162,219
Int. Cl.³ B65D 5/42
U.S. Cl. 229—23 BT **7 Claims**



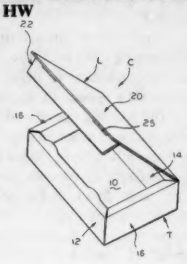
1. A reinforced corrugated shipping box for bulk materials comprising a pair of identical corrugated blanks each scored and folded on two vertical corners to form a vertical end wall and two vertical partial side walls terminating in vertical edges, the partial side walls of each blank being disposed in overlapping relationship with the partial side walls of the other said blank, a pair of vertical seams joining said overlapped partial side walls to form a tube, each said vertical seam being respectively disposed in spaced relationship from said vertical edge of the inside one of said overlapped partial side walls, thereby defining an integral free end portion on the inside of each side wall of the assembled tube between said vertical edge and said seam, each free end portion being folded inwardly on vertical fold lines to form a reinforcing post of triangular configuration, spaced from said end walls and said corners, that portion of said reinforcing post incorporating said vertical edge lying adjacent the respective side wall and spaced from said end walls, and means defining a bottom wall for cooperating with said tube.

4,341,339

HOLLOW WALL TRAY AND COVER CLOSURE LOCK ARRANGEMENT

Frank E. Zore, Richmond Heights, Ohio, assignor to Container Corporation of America, Chicago, Ill.

Filed Mar. 25, 1981, Ser. No. 247,393
Int. Cl.³ B65D 5/20, 5/66, 5/68
U.S. Cl. 229—34 HW **7 Claims**



1. In a closure lock arrangement for a hollow wall tray and an integral hinged cover, formed of a unitary blank of foldable paperboard, the combination of:

(a) a tray member including a bottom wall having opposed hollow front and rear side walls and hollow end walls upstanding therefrom and foldably joined thereto and to each other to form a box-like enclosure open at the top;

(b) said hollow front side wall comprising a pair of inner and outer panels spaced from each other and having upper edges imterconnected by a relatively narrow connecting panel which has at least one integral lock tab projecting inwardly from the inner edge thereof;

(c) a cover member including a top wall hingedly attached at its rear edge to an upper edge of said rear side wall and having a locking flange extending downwardly from a front portion thereof;

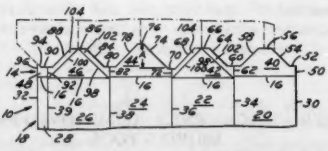
(d) said flange being spaced inwardly from the front edge of said top wall and being substantially the thickness of said front wall and presenting at least one aperture aligned with said tray member lock tab for receipt thereof when a marginal portion of said cover top wall is seated on said tray member front wall upper connecting panel.

4,341,340

CONTAINER WITH INFOLDED BOTTOM CLOSURE

Robert E. Lisiecki, Orchard Lake, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Sep. 16, 1980, Ser. No. 187,648
Int. Cl.³ B65D 5/08
U.S. Cl. 229—37 R **6 Claims**



1. A blank for a container of foldable sheet material having an overall surface of thermoplastic material that becomes adhesive when subjected to heat, said blank comprising a plurality of side panels, first and second pairs of (opposed) bottom closure panels alternately connected to said side panels along a lateral score line as extensions thereof and connected one to the other by vertical score lines along their sides for a

(predetermined) partial portion of their heights, each bottom closure panel having free cut edges extending in first directions parallel to said lateral score line and inwardly toward each other from the end of each vertical score line (for a thence in second angularly coverging directions and thence in third directions parallel to said first direction toward the centerline of said bottom closure panel and meeting at said centerline (such that the panels of the adjacent blank are interested therewith prior to being cut apart therefrom), said free cut edges extending in said first direction being such that they provide for an increased height of said vertical score lines and, hence, support for the container corners to be formed by said vertical score lines.

4,341,341

TAKE OUT CARTON AND BLANK FOR FORMING SAME

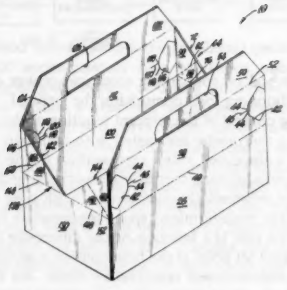
Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 178,099, Aug. 14, 1980, Pat. No. 4,307,834. This application Jun. 15, 1981, Ser. No. 273,960

The portion of the term of this patent subsequent to Dec. 29, 1998, has been disclaimed.

Int. Cl.³ B65D *5/10*

U.S. Cl. 229—39 R **12 Claims**



1. A take out carton having a reclosable flat top portion comprising:

a generally rectangular tubular side wall including alternatively hingedly connected opposed side panels and end panels;

a bottom panel hingedly connected to said side wall;

a pair of top panels, each respectively hingedly connected along the bottom edge thereof to the top edge of a side panel, each said top panel further including an opposed pair of tab receiving apertures, said tab receiving apertures being respectively disposed adjacent the opposed side edges of the associated top panel;

a handle hingedly connected to the top edge of each said top panel; and

a pair of closure panels, each being formed from a pair of triangular sections with the bottom edge of each said triangle being respectively hingedly connected to the top edge of one of said end panels, and with one side edge of each said triangles being respectively hingedly connected to a side edge of a top panel, and with each said triangles further including a central fold line defining a pair of minor triangle portions, each said central fold line beginning at the apex of a triangle nearest to the edge of an associated end panel and extending to the opposite side of said triangle, whereby in the closed condition of the carton, the upper edges of said top panels are in abutting relationship forming a flat configuration, with said handles extending above said flat top portions, and with each said triangles of said closure panels being folded about said central fold line such that said minor triangle portions overlap to define a double thickness closure tab, of greater cross-sectional area than the cross-sectional area of the associated tab receiving aperture in said top panel, with each said closure tab being coplanar and interengaged with the associated top panel by having a portion thereof extending through said tab receiving aperture internally of said top panel therby structurally rigidifying said carton and maintaining said flat top portion in a closed position.

4,341,342

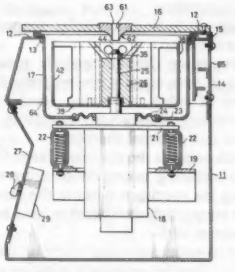
CENTRIFUGE

Minoru Hara, Sakado, Japan, assignor to Kabushiki Kaisha Kubota Seisakusho, Tokyo, Japan

Filed Dec. 4, 1980, Ser. No. 213,143

Int. Cl.³ B04B *15/02, 15/08, 1/00*

U.S. Cl. 233—1 A **14 Claims**



1. A centrifuge comprising:

an outer housing having an opening in its top panel;

an inner housing disposed in the outer housing, the upper end portion of said inner housing being engaged with the marginal portion of the opening of the outer housing;

a lid for covering the opening of the outer housing;

a motor disposed below the inner housing in the outer housing, said motor having a rotary shaft which extends into said inner housing;

a rotor disposed in the inner housing and mounted on the portion of the rotary shaft of the motor which extends into the inner housing, the rotor having formed integrally therewith a plurality of arms disposed at equiangular intervals about its center of rotation, the arms each having stepped portions formed therein at its end to extend towards adjacent arms, and the upper parts of the arms on the side of the opening of the outer housing being respectively expanded sectorially to form sectorial plate portions having arcuate marginal edges;

a bottomed, cylindrical wind shield disposed to surround the rotor, the upper marginal portion of the inner surface of the wind shield being held in contact with the arcuate marginal edges of the sectorial plate portions;

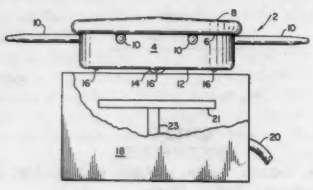
tube racks inserted between adjacent ones of the arms of the rotor to hold test tubes substantially at right angles to the rotary shaft, each tube rack having forming integrally therewith engaging portions for engagement with the stepped portions of each arm so that a centrifugal force applied to the tube rack is received by the stepped portions, the tube racks having end faces so shaped that, when said tube racks are loaded on the rotor, said end faces on the side of the open end of the wind shield cooperate with the sectorial plate portions of the rotor to almost entirely close the open end of the wind shield.

4,341,343

MAGNETICALLY DRIVEN CENTRIFUGE SYSTEM

Stuart Beckman, 531 Kingsland St., Nutley, N.J. 07110

Filed Sep. 22, 1980, Ser. No. 189,158
Int. Cl.[3] B01D 1/00
U.S. Cl. 233—26 16 Claims



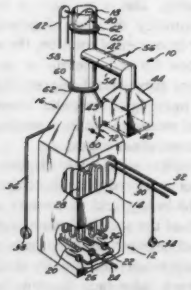
1. A magnetically driven centrifuge system, comprising:
a chamber having an open top and a closed bottom, with an axially disposed supporting pivot extending externally from the closed bottom;
a magnetic member;
the chamber including means for supporting the magnetic member therein:
a flange extending circumferentially around the open top;
a plurality of slots equally spaced around the flange;
a plurality of tubes containing specimens carried within corresponding slots so as to extend radially from the chamber and external thereto;
a cap which engages the chamber flange for closing the open top and including means cooperating with the flange for retaining the specimen tubes in the slots;
a base for supporting the chamber, said base having a rotatable magnet; and
the closed chamber spinning freely on the supporting pivot about the chamber axis upon rotation of the base magnet by virtue of the centrifugal force created by the magnetic interaction between the rotating magnet and the magnetic member supported within the chamber, whereby a centrifuging action is imparted to the specimens in the tubes.

4,341,344

AUTOMATIC DRAFT CONTROLLER

Robert J. Russell, 1332 Lymric Way, Bakersfield, Calif. 93309

Filed Feb. 25, 1980, Ser. No. 124,089
Int. Cl.[3] F23N 3/02
U.S. Cl. 236—45 20 Claims



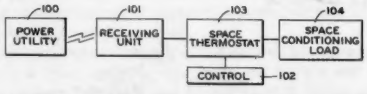
15. An automatic draft control plate for regulating the velocity of the draft in a furnace, comprising:
a plate attached along one edge to a rotatable shaft and located in a channel adapted to be a communication with the flue of said furnace, said plate adapted to open or close in response to a change in pressure differential across it in order to maintain efficient draft conditions in said furnace;
a rod attached to one end of said shaft and disposed generally perpendicular to said plate, said rod being slidably adjustable along its axis; and
a counter-weight attached to said rod so as to be slidably adjustable in a direction generally perpendicular to said rod, said counter-weight adaptable to adjustably apply a moment to said plate in order to set said plate in an initially open position, said rod being adjustable to vary the rate of change of said moment during said rotation of said plate in response to changes in pressure differential in order to adjust the sensitivity of said rotation, said counter-weight comprising a second rod having a weight slidably mounted therein.

4,341,345

METHOD AND APPARATUS FOR POWER LOAD SHEDDING

Jeffrey M. Hammer, New Brighton; David C. Ullestad, St. Louis Park, and Stephen J. Wesoloski, Eagan, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 19, 1980, Ser. No. 122,787
Int. Cl.[3] H02J 1/00; F25B 29/00
U.S. Cl. 236—46 R 20 Claims



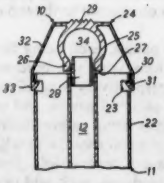
1. A method of controlling electrical power demand of a space-conditioning load comprising the steps of:
assuming control of the setpoint function of the space-conditioning thermostat associated with said load;
causing a simulated value representing the setpoint of said space-conditioning thermostat associated with said load to change substantially continuously with time at a first rate to a first predetermined space temperature limit wherein said first rate is a function of the difference between said simulated set point at the time control is assumed and such first predetermined temperature limits and the predetermined electrical power demand control interval; and
returning control of said setpoint function to said thermostat.

4,341,346

RADIATORS FOR USE IN HOT WATER CENTRAL HEATING SYSTEMS

Victor J. Simpson, Walton-on-Thames, England, assignor to Alcan Aluminium (U.K.) Ltd., London, England

Filed Jul. 30, 1980, Ser. No. 173,754
Int. Cl.[3] F24H 3/00
U.S. Cl. 237—70 5 Claims



1. A radiator for use in hot water central heating systems and constructed from extruded aluminium or aluminium alloy section, one configuration of section having at least one tubular duct extending therethrough being used as the heat exchanger which interconnects other configurations of section which form the fluid flow and return headers and which each incorporate a locking flange which interlocks with a respective external slot pre-formed in the side of each heat-exchanger section, the flow and return headers being drilled at intervals

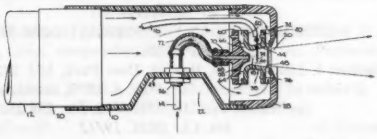
to coincide with the position of the tubular duct or ducts in each heat-exchanger section and one end of a double-ended chamfered barrel nipple being pressed as an interference fit into the end of said duct and the other end of the chamfered nipple being pressed as an interference fit into the corresponding hole drilled into the header at right angles to the cored flow path, thus forming a rigid assembly with a fluid pressure tight connection at each joint between the heat-exchanger duct and the headers.

4,341,347

ELECTROSTATIC SPRAYING OF LIQUIDS

Joseph M. DeVittorio, Will, Ill., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed May 5, 1980, Ser. No. 146,801
Int. Cl.³ B05B *5/02, 1/34*
U.S. Cl. 239—3 **12 Claims**



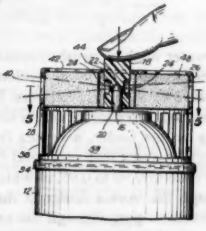
11. A method for spraying small size liquid particles in the size range of approximately five to fifteen microns, said method comprising the steps of directing air to flow as a vortex about an axis within a chamber, supplying liquid into said vortex at its axis so that said vortex forms and entrains particles from said liquid, and applying an electrical charge to the liquid particles thus formed by causing said particles entrained in said vortex to pass by a needle shaped electrode which extends into vortex flow transversely of said axis while said particles are rotating at a high velocity but before they have been thrown outwardly against the walls of said chamber and while maintaining a high electrical potential on said electrode.

4,341,348

DIRECT AND INDIRECT FRAGRANCE DISPENSING DEVICE

Neal S. Dearling, 132 E. 35th St., New York, N.Y. 10016

Filed Nov. 10, 1980, Ser. No. 205,430
Int. Cl.³ A61L *9/04*
U.S. Cl. 239—34 **5 Claims**



1. A fragrance dispensing device for direct or indirect dissemination of a fragrance comprising:

a cover member adapted to be positioned over the discharge outlet means of a fragrance container,

said cover member including means to provide an access passage from within said cover member to the exterior of said cover member on diametrically opposed sides of said cover member,

a pair of carrier members having the ability to absorb or adsorb a liquid fragrance disposed within said cover member on diametrically opposite sides of said cover member,

actuation means including a fragrance spray outlet member having at least a pair of spray outlet ports therein on diametrically opposed sides thereof and cooperable with said discharge outlet means to discharge a spray of said fragrance from said outlet ports,

said actuation means and cover member being movable relative to each other between a first position wherein said outlet ports are oriented in register with said access passages in said cover member to discharge said fragrance directly to the exterior of said cover member as a spray and a second position wherein said outlet ports are oriented to discharge said fragrance onto said carrier members within said cover assembly to disseminate said fragrance indirectly over a long period of time, and

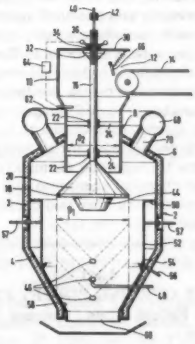
means within said cover member to direct a flow of air into and around said carrier members.

4,341,349

APPARATUS FOR THE DAMPING OF BULK MATERIAL

Rieschel Hartmut, Hattingen, Fed. Rep. of Germany, assignor to Maschinenfabrik Koppern GmbH & Co. KG., Hattingen, Fed. Rep. of Germany

Filed Jul. 1, 1980, Ser. No. 164,973
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2926713
Int. Cl.³ B05B *3/04*; B65G *25/00*
U.S. Cl. 239—222.17 **20 Claims**



1. Apparatus for the damping of bulk material in which a liquid is to be sprayed into a falling stream of said material, the apparatus comprising an upright tubular shaft through which the material is to fall in a stream; a plate arranged coaxially below the lower end of the tubular shaft and defining an annular gap between the tubular shaft and the plate, through which gap the material will pass after falling through the tubular shaft; at least one spray nozzle arranged below the plate in a spraying region, and a housing which encloses the lower end of the tubular shaft, the plate and the spraying region.

4,341,350

CHEMICAL INJECTION SYSTEM FOR HIGH PRESSURE WASHERS

Otto Wemmer, 3710 Greenbriar Dr., Columbia, S.C. 29206

Filed Sep. 5, 1980, Ser. No. 184,457
Int. Cl.³ B05B *9/03*
U.S. Cl. 239—312 **17 Claims**

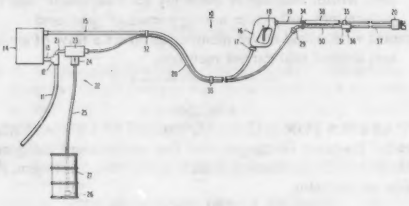
1. An improved chemical injection system for injecting a chemical solution into a high velocity spray of liquid provided by a pressure washer having pressurized liquid delivery means for highly pressurizing a liquid supplied to said pressurized liquid delivery means from a source of relatively low pressure

liquid and a high pressure nozzle for forming said high velocity spray by discharging said highly pressurized liquid to ambient pressure, said chemical injection system comprising:

chemical nozzle means for emitting said chemical solution as a chemical spray intersecting said high velocity spray along a line of intersection extending across at least about 50% of the transverse width of said high velocity spray;

a spray head assembly for mounting said chemical nozzle means in spaced relation to said high pressure nozzle so that said high velocity spray does not impinge upon said chemical nozzle means;

chemical conduit means for providing a liquid flow path between said chemical nozzle means and said source of relatively low pressure liquid;



an eductor means in said chemical conduit means for drawing a chemical agent into said flow path and mixing said chemical agent with said low pressure liquid to form said chemical solution, said eductor means including suction means for drawing said chemical agent into said flow path from a reservoir containing a body of said chemical agent at ambient pressure in response to flow of said low pressure liquid through said chemical conduit means; and,

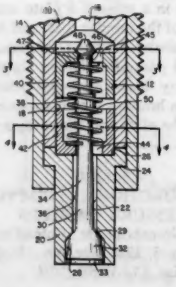
chemical control valve means positioned in said chemical conduit means between said eductor means and said chemical nozzle means, said chemical control valve means being selectively actuable for allowing said low pressure liquid to flow through said chemical conduit means so as to draw said chemical agent into said flow path and emit said chemical solution from said chemical nozzle means as said chemical spray.

4,341,351

OUTWARDLY OPENING POPPET PINTLE NOZZLE

Frank DeLuca, Enfield, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Jun. 2, 1980, Ser. No. 155,433
Int. Cl.³ F02M *61/06*
U.S. Cl. 239—453 **11 Claims**



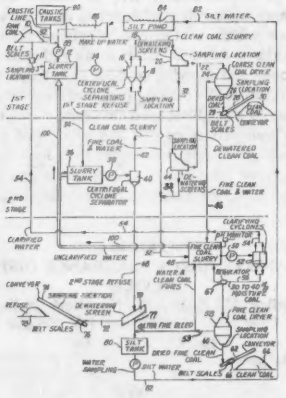
1. In a fuel injection nozzle, a nozzle holder body having a throughbore forming a fuel passageway provided with an upper inlet end and having an enlarged counterbore at its lower end forming a valve mounting chamber, a holder body tip detachably connected to the nozzle holder body having a throughbore and a counterbore at its upper end of the same diameter and registering with the counterbore of the nozzle holder body, valve mounting means comprising oppositely facing cup members having a spiral spring therebetween, one cup member being slidably mounted in the counterbore of the nozzle holder body and forming a combination upper spring seat and valve hanger, and the other cup member being seated in the counterbore of the holder body tip forming a lower spring seat and partially extending into the counterbore of the nozzle holder body to coaxially align the counterbores, a pintle valve having a stem disposed in the throughbore of the holder body tip and extending through openings in the oppositely facing cup members, said stem having an enlarged tip at its upper end engaging on the upper spring seat and valve hanger, a valve seat formed at the lower end of the throughbore of the holder body tip, and a head on the lower end of the pintle valve stem for engaging the valve seat.

4,341,352

METHOD OF COAL WASHING AT LOW SPEED PUMPING

Delbert I. Liller, Rte. 4, Box 64, Deer Park, Md. 21550

Division of Ser. No. 63,707, Aug. 6, 1979, abandoned. This application Jun. 10, 1980, Ser. No. 158,250
Int. Cl.³ B02C *19/12*
U.S. Cl. 241—21 **5 Claims**



1. A method of water washing crushed coal for gravitational separation in a centrifugal separating cyclone at low speed pumping at a pressure of 8–18 psig between the inlet and the vortex finder outlet, said cyclone having a circular bowl and being fitted with a vortex finder, a vortex finder cylindrical sleeve, a dish, an orifice and a feed pipe, said cyclone having a height to diameter ratio of 0.90 to 0.95, in which light fractions are removed through the vortex finder at the top of the cyclone and heavy fractions pass through the orifice at the bottom, said method comprising:

(a) installing a removably one-piece dish-orifice unit made of erosion resistant material selected from the group consisting of ceramic, refractory carbide alloy, urethane rubber, nickel hardened cast iron and nickel hardened cast steel,

(b) providing the geometry of the dish portion of said dish orifice unit by limiting the height of the dish portion to between 0.15B and 0.67B, where B is the inner diameter of the circular cyclone bowl, and providing a first included angle of the dish at the top edge of 85° within a range of +150° or minus 15° and providing a second included angle of the dish below the first included angle of 110° within a range of +15° and 15° and, the third included angle in the

throat of the orifice of 12° with a variation of from plus 7° to 12° to minus 3° which is 9°;

(c) adjusting the ratio of the diameter of said vortex finder sleeve diameter in relationship to the cyclone bowl diameter from 0.3B to 0.5B to vary the percent recovery of the washed coal;

(d) mounting said vortex finder sleeve within said vortex finder;

(e) adjusting the height of the vortex finder sleeve in relation to the top edge of the dish from zero up to 0.26B, and after the aforesaid adjustment; and

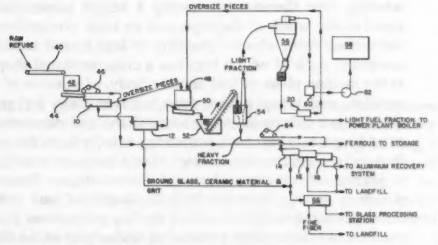
(f) pumping crushed coal in water through said cyclone at a solids concentration of 5% to 40% and at a differential pressure of 0.3 to 1.0 atmospheres under streamlined centrifugal flow between 6 and 16 feet of water per second.

4,341,353

METHOD AND APPARATUS FOR RECOVERING FUEL AND OTHER RESOURCES FROM REFUSE UTILIZING DISK SCREENS

Frank G. Hamilton, Memphis, Tenn., and John Kelyman, Jr., Warren, Oreg., assignors to Rader Companies, Inc., Portland, Oreg.

Filed Feb. 12, 1979, Ser. No. 11,427
Int. Cl.³ B02C *23/14*
U.S. Cl. 241—24 **15 Claims**



1. In a refuse processing apparatus,

means for shredding the refuse into pieces;

a first disk screen for separating the shredded refuse into underflow and overflow, the overflow consisting of scalped-out oversize pieces of refuse which are larger than a predetermined maximum size and the underflow consisting of the remainder;

means for re-shredding the overflow from the first disk screen into pieces which are predominantly smaller than the predetermined maximum size;

a second disk screen for separating the underflow from the first disk screen into underflow and overflow, the underflow consisting primarily of ground glass and other fine material; and

means for combining the re-shredded overflow from the first disk screen with the overflow from the second disk screen.

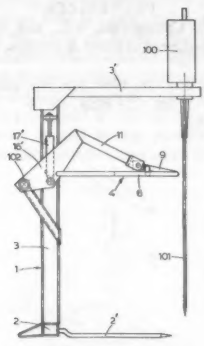
4,341,354

DEVICE FOR CUTTING OUT AND TRANSPORTING A SILAGE BLOCK

Fredericus Liet, and Cornelis H. Liet, both of Losser, Netherlands, assignors to Triolet Silo Europe BV, Losser, Netherlands

Filed May 7, 1980, Ser. No. 147,086
Claims priority, application Netherlands, May 18, 1979, 7903956
Int. Cl.³ A01F *29/00*
U.S. Cl. 241—101.7 **31 Claims**

3. In a device for cutting out and transporting a silage block of the type having an upstanding main frame which is adapted to be connected to a tractor and which is provided with an at least approximately horizontal cross-beam at the lower end thereof to which a plurality of parallel tines are connected to extend substantially perpendicular thereto, an at least approximately horizontal cutting means support frame supported near the upper end of the main frame along which a cutting means is adapted to be reciprocated, and a pressure frame supported on the main frame, the improvement in a pressure frame comprising pressure frame support means adapted to be supported by the upstanding main frame underneath said cutting means support frame, a pressure frame supported by said support



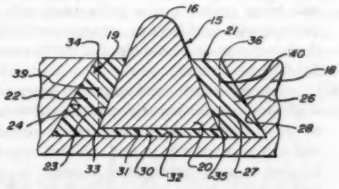
means having a shape so as to extend near the path of travel of the cutting means and comprising two at least approximately symmetrically arranged pressure frame parts which are displaceable with respect to each other, an actuating means operably connected to said two pressure frame parts to displace said pressure frame parts, and an elastically deformable intermediate part at the ends of said pressure frame parts, which are remote from said support connecting said pressure frame parts to each other to facilitate relative displacement of said pressure frame parts.

4,341,355

ARRANGEMENT FOR SUPPORT OF CONTACT ELEMENTS FOR MATERIAL TREATING APPLICATIONS

Michael E. Hornberger, Carlisle, Pa., assignor to The Frog, Switch & Manufacturing Company, Carlisle, Pa.

Filed Mar. 13, 1980, Ser. No. 129,830
Int. Cl.³ B02C *17/22*
U.S. Cl. 241—102 **12 Claims**



1. In a device for treating materials, a metal support element formed to provide a socket in an upper face thereof, a metal contact element disposed in said socket, a first pair of side surfaces being defined by opposite internal side surfaces of said support element within said socket and a second pair of side surfaces being defined by opposite external side surfaces of said contact element, said first and second pairs of side surfaces being positioned to provide a pair of spaces therebetween, and a solid resilient plastic material disposed in said pair of spaces and acting between said first and second pairs of side surfaces

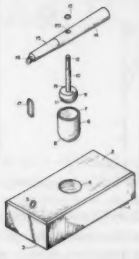
to hold said contact element against upward movement out of said socket, said side surfaces being generally planar and at least one of said pair of side surfaces being generally in planes converging upwardly and inwardly to intersect in a line above said socket with upward movement of said contact element relative to said support element being effective to apply compressive forces to said plastic material with minimal development of tensile and shearing stresses in said plastic material.

4,341,356

PULVERIZER

Edward R. Hiott, Cottageville, S.C., and Sara E. Scheckel, Sanford, Fla., assignors to Hiott & Bridges, Inc., Cottageville, S.C.

Filed Jun. 16, 1980, Ser. No. 160,076
Int. Cl.³ B02C *19/08*
U.S. Cl. 241—169.2 **9 Claims**



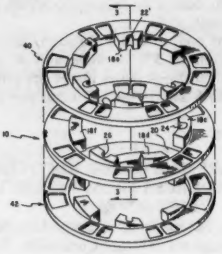
1. A device for use in pulverizing materials comprising:
a. a base;
b. a hole in said base;
c. holding means shaped to fit securely in said hole, comprising a rounded bottom and a circular interior surface of the same diameter from said rounded bottom to the top of said holding means, and operative to hold said materials; and
d. a pulverizer comprising:
(1) a rounded pulverizing bottom in the shape of a hemisphere and of similar shape, but of slightly smaller dimensions, than said rounded bottom of said holding means;
(2) a rounded upper portion comprising a rounded side with any section of said rounded side being contiguous with said rounded pulverizing bottom, said rounded pulverizing bottom and said rounded upper portion being in the shape of a truncated sphere, said rounded side being operable as a pulverizing side segment in contact with said holding means rounded bottom and the lower portion of said circular interior surface of said holding means; and
(3) a shaft secured to said rounded upper portion, said shaft movable causing said rounded pulverizing bottom to move against said holding means rounded bottom and said rounded side of said rounded upper portion to be used as a pulverizing side segment in contact with said holding means rounded bottom and said lower portion of said circular interior surface of said holding means dependent on the movement of said pulverizer by said shaft,
whereby said rounded pulverizing bottom and said rounded upper portion of said pulverizer are shaped and sized to fit snugly within said holding means rounded bottom and said lower portion of said circular interior surface of said holding means, whereby when said materials are placed into said holding means and said shaft is moved with pressure in any direction, said materials are pulverized between said pulverizer and said holding means.

4,341,357

WINDING CORE FOR MAGNETIC TAPE ADAPTED FOR STACKING

Joseph De Filippo, Monroe, Conn., assignor to CBS Inc., New York, N.Y.

Filed Sep. 25, 1980, Ser. No. 191,052
Int. Cl.³ B65H *75/18*
U.S. Cl. 242—68.5 **9 Claims**



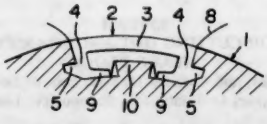
1. A winding core for magnetic tape, adapted for nesting between like first and second sandwiching cores, comprising:
an annular body having first and second substantially parallel annular surfaces, an outer circumferential surface for winding tape therearound having a height substantially equal to the width of the tape, and an inner circumferential surface from which a plurality of lugs extend radially inwardly, each of which lugs has a cross-sectional shape, at the median plane of said annular body, of a sector of an annulus, and being spaced from adjacent lugs by gaps which have substantially the same shape and dimensions as said lugs, said lugs each projecting equally from the said first and second annular surfaces of said body, over at least a portion of its circumferential dimension, a distance which is greater than one-half the height of said outer circumferential surface, each of the lug projections from the first annular surface for mating with a gap of the first sandwiching core and each of the lug projections from the second annular surface for mating with a gap of the second sandwiching core, the innermost end of said lugs being circularly curved and together defining a discontinuous inner circumferential core surface.

4,341,358

HUB FOR MAGNETIC TAPE

Shigemasa Shoji, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1980, Ser. No. 190,956
Claims priority, application Japan, Oct. 5, 1979, 54-137963[U]
Int. Cl.³ B65H *75/28*
U.S. Cl. 242—74.1 **4 Claims**



1. In a hub for securing a magnetic tape comprising a recess formed in the peripheral part of the hub, said recess including side wall grooves and a bottom, and a magnetic-tape clamp formed of a resilient material for fitting into the recess, an improvement which comprises an upper clamp rib formed of resilient material and having an outer surface with the same curvature as that of the hub; legs formed at both ends of the upper rib; projections extending outward from the legs by a

first distance to be fitted into the side wall grooves of the recess; a convex portion formed in the central part of the recess bottom; and lower ribs extending inward from the legs to terminate in the vicinity of, and spaced from, said convex portion formed in the central part of the recess bottom by a second distance, said second distance being less than said first distance and being sufficiently large for said projections to be fitted into said side wall grooves.

4,341,359

GUIDE ARRANGEMENT FOR A SAFETY BELT

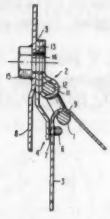
Walter Jahn, Ehningen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 21, 1980, Ser. No. 142,126

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2915988

Int. Cl.³ A62B *35/00*; B65H *75/48*

U.S. Cl. 242—107 **5 Claims**



1. In a guide device for a safety belt of a safety belt system for a motor vehicle which includes a delivery roll means for accommodating the safety belt, a deflector fitting having a deflector crosspiece, and a guide device having a guide slot of a width which is narrower than a doubled thickness of the safety belt, the improvement comprising said guide device being mounted together with said deflector fitting to a fixed vehicle part and extending from said fixed part to a free end, a runner being mounted on the free end of the guide device and defining said guide slot in conjunction therewith, said guide slot being located upstream of said deflector fitting relative to the direction of travel of said safety belt from said delivery roll means, and means for enabling the position of said guide slot to automatically adjust to the path of the safety belt at any given moment by shifting with respect to a longitudinal center axis of the deflector crosspiece by an amount which is at least equal to the radius of curvature of the safety belt that is a function of the stiffness of the safety belt and retraction force in a winding-up direction of the delivery roll means in a region of deflection of the safety belt at the deflector crosspiece, whereby friction between the safety belt and portions of said guide device are minimized.

4,341,360

LOCKING MEANS FOR SAFETY BELTS

Stig M. Lindblad, 410 Bay La., Muskegon, Mich. 49445

PCT No. PCT/SE80/00065, § 371 Date Nov. 5, 1980, § 102(e) Date Nov. 5, 1980, PCT Pub. No. WO80/01877, PCT Pub. Date Sep. 18, 1980

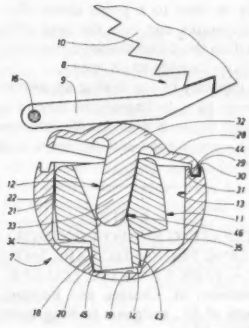
PCT Filed Mar. 5, 1980, Ser. No. 212,705

Claims priority, application Sweden, Mar. 5, 1979, 7901949

Int. Cl.³ A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.4 A **6 Claims**

1. Locking means for a safety belt of the reel belt type provided with a strap webbing which against the bias of a spring can be unwound from a strap winding-up device having a strap reel rotatably journalled therein, said locking means comprising a pawl movable between a position releasing the strap reel, and a locking position in which the strap reel is maintained locked against rotation in one direction, and also comprising activating means for the moving the pawl to its locked position when the activating means is subjected to an acceleration exceeding a predetermined value, said activating means comprising a body of inertia positioned in a housing and having a base surface, said body being adapted to selectively occupy a central rest position with the base surface resting on a support surface of the housing, and a peripheral activated position in which the body of inertia is tilted about a first pivoting center, said activating means also comprising a transmission element arranged so as to be adapted to rest against an annular support surface of the housing and provided with a contact surface arranged to cooperate with the pawl and a sensor portion by cooperation with the body of inertia provided to sense its positions, and an upper portion with a peripheral, annular edge by means of which the transmission element is arranged in the resting position of the body of inertia to rest against said annular support surace positioned at the top of said housing, said transmission element in said resting position permitting the pawl to take its releasing position and when the body of inertia



is repositioned to activated position the transmission element being arranged to pivot with its annular edge on said annular support surface acting as a second pivoting center, thereby providing for a displacement of said contact surface, said pawl being arranged to assume its locking position under the action of the displacement of said contact surface, wherein the improvement comprises: said sensing portion of the transmission element being a shank which in said resting position is centrally positioned relative to the axis of symmetry of the body of inertia and which projects downwards from said upper portion of the transmission element and is provided with a lateral, peripheral sensing surface for contact with the body of inertia, and said body of inertia being provided with a central cavity into which the shank projects, said cavity having a peripheral activation surface for contact with the shank, so that when the body of inertia is repositioned to its activated position said body by means of its activating surface removes the sensing surface of the shank and thereby tilts the shank, so that said contact surface will be displaced by the pivoting motion of the transmission element relative to said second pivoting center.

4,341,361

YARN CARRIER FOR PRESSURE KIER

Humayun N. Shaikh, London, England, assignor to Burke Mills, Inc., Valdese, N.C.

Filed Oct. 1, 1980, Ser. No. 192,717

Int. Cl.³ B65H *49/02*; D06F *17/02*

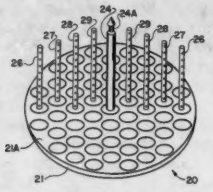
U.S. Cl. 245—130.4 **6 Claims**

6. An improved yarn package carrier of the type used to support numerous packages of yarn in vertically-spaced relation on a plurality of upright spindles within a pressure dyeing apparatus having cylindrical sidewalls and a dome-shaped cover cooperating therewith to sealingly close the opening, wherein the improved yarn package carrier comprises:

(a) a circular base for being positioned within the dyeing

apparatus adjacent the bottom thereof and having an upper surface; and

(b) a plurality of spindles mounted on the upper surface of the base perpendicular to and having at least two different lengths, the shortest length spindles being positioned around the circumference of the base and the longer length spindles being clustered in spaced-apart relation around the central portion of the base so as to extend



upwardly in tiers to a point above the opening of the dyeing apparatus and into the area defined by and enclosed within the dome-shaped cover into close proximity thereto from its edge to its apex;

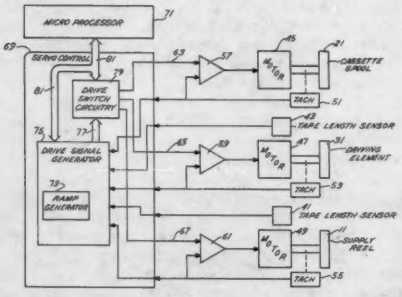
whereby the capacity of the dyeing apparatus is increased by enabling as many yarn packages to be carried by the spindles as can be mounted on each said spindle intermediate the upper surface of the carrier base and the inner wall of the dome-shaped cover.

4,341,362

ANTICIPATING SERVO CONTROLLER FOR CONTROLLING MAGNETIC TAPE MOVEMENT IN A TAPE CASSETTE LOADER

David O. Neathery, St. Charles, and Edward J. Riggs, West Chicago, both of Ill., assignors to King Instrument Corporation, Westboro, Mass.

Filed Oct. 23, 1980, Ser. No. 199,923
Int. Cl.³ G11B *15/06, 23/12*
U.S. Cl. 242—183 **13 Claims**



9. A tape cassette loader in which two different controlled tensions are provided to a magnetic tape moving from a supply spool to a cassette spool of a tape cassette at a greatly varying rate of speed, comprising:

a supply spool for providing a supply of magnetic tape;

a cassette spool for receiving the magnetic tape;

first tension means for receiving the magnetic tape from said supply spool and providing a first tension to said tape, said first tension means containing a length of the tape in order to maintain said first tension;

first sensor means for monitoring the length of the tape contained by said first tension means;

second tension means for receiving the tape from said first tension means prior to take up by said cassette spool and providing a second tension to the tape, said second tension means containing a length of the tape in order to maintain said second tension;

second sensor means for monitoring the length of the tape contained by said second tension means

tape moving means interposing said first and said second tension means for moving the tape from said first tension means to said second tension means;

anticipator means for anticipating the need of tape by said second tension means; and

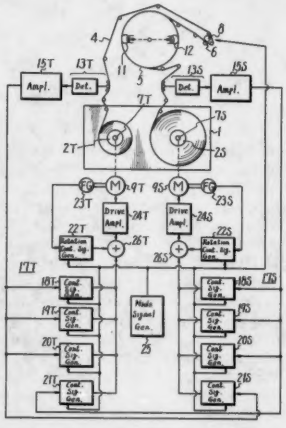
control means for driving said tape moving means, said supply spool and said cassette spool, said control means responsive to said first and said second sensor means and said anticipator means for controlling the speed at which the tape is moved by said tape moving means and controlling the speed of said supply spool, whereby said first and said second tension are maintained during movement of the tape from said supply spool to said cassette spool.

4,341,363

TAPE TENSION CONTROL CIRCUIT

Kiyoshi Inatome, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 3, 1980, Ser. No. 183,852
Claims priority, application Japan, Sep. 4, 1979, 54/113345
Int. Cl.³ B65H *59/38, 63/02*
U.S. Cl. 242—189 **9 Claims**



1. A tension servo control circuit responsive to selected operation modes for a helical scan video tape recorder having a tape guide drum on which a magnetic tape is helically wrapped, comprising:

(a) supply and take-up reels;

(b) a pair of reel drive motors coupled to said supply and take-up reels driving the reels in response to the selected operation modes;

(c) a first sensor means for sensing tensions of said magnetic tape extended between said take-up reel and said tape guide drum;

(d) a second sensor means for sensing tensions of said magnetic tape extended between said supply reel and said tape guide drum;

(e) a first feedback loop means for supplying a first control signal related to the sensed tension at said first sensor to either one of said reel drive motors in response to said selected operation modes;

(f) a second feed back loop means for supplying a second control signal related to the sensed tension at said second sensor to either one of said reel drive motors in response to said selected operation modes;

(g) said first and second feedback loop means including a

plurality of control signal generators, each control signal generator corresponding to a different operating mode of the recorder corresponding to different tape tensions;

(h) a mode signal generator means for selecting appropriate control signal generators in response to manually entered recorder mode commands;

(i) a rotation control sensing means for measuring a rotation speed of the supply and take-up reels and generating a speed control signal; and

(j) adder means for combining tension control signals from the control signal generators and the speed control signals from the rotation control sensing means, and for providing a combined output signal for control of the drive motors.

4,341,364

DEVICE FOR DETECTING IRREGULAR OPERATIVE SITUATIONS, PARTICULARLY FOR TAPE DECKS

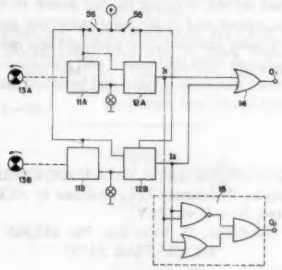
Ciro Maddaloni, Rome, Italy, assignor to Autovox S.p.A., Rome, Italy

Filed Mar. 18, 1980, Ser. No. 131,325

Claims priority, application Italy, Mar. 20, 1979, 48413 A/79

Int. Cl.³ B65H *59/38;* **G03B** *1/02;* **G11B** *15/13*

U.S. Cl. 242—191 **1 Claim**



1. In a cassette tape deck including: a pair of hub-carrying discs, a pair of motion detectors, respectively, associated with said discs and consisting of logic elements the output of which show a logic level 1 output if the hub-carrying discs associated thereto change their state of movement from rotation to stopped, or a logic level 0 output if the associated hub-carrying disc changes its state of movement from stopped to rotation; first electric circuits controlling reversal of tape direction, and second electric circuits controlling ejection of a cassette, the improvement of a device for detection of irregular operating situations of the tape comprising: a first OR gate having two inputs and an output, said first gate inputs being connected to receive the two outputs of said motion detectors, and the output of said first gate being connected to said first and second electric circuits; a second exclusive OR gate having the two inputs and an output, said second gate inputs being corrected to receive the two outputs of said motion detectors, and the output of said second gate being connected to said second electric circuit whereby the output of said first gate is at logic level 1 only when one of said discs is rotating and the other of said discs is stopped and is a logic level 0 when both of said discs are rotating; and the output of said second gate is at logic level 0 if both of said discs are either rotating or stopped and switches to a logic level 1 if one of said discs is stopped whereby should either one of said discs stop due to any irregularities in operation of the tape deck a cassette is automatically ejected.

4,341,365

VIDEO TAPE CASSETTE

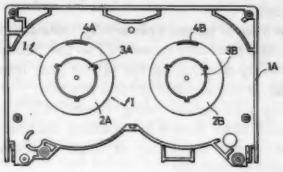
Kengo Oishi, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 16, 1980, Ser. No. 187,674

Claims priority, application Japan, Sep. 17, 1979, 54/128882[U]

Int. Cl.³ G03B *1/04;* **G11B** *15/32*

U.S. Cl. 242—199 **6 Claims**



3. A video tape cassette comprising: a casing including an upper cassette half and a lower cassette half; and a pair of magnetic tape feeding and taking-up flangeless type cylindrical tape winding hubs operatively disposed in said casing, each of said hubs having a dual structure including an inner drum adapted to engage a drive shaft of a video tape utilization device and an outer drum on which a magnetic tape is wound; said inner drum having first engaging means for transmitting torque to said outer drum; said outer drum having second engaging means for receiving torque from said first engaging means, said inner drum being loosely fitted into said outer drum in the axial direction of said drive shaft; said lower cassette half comprising a cylindrical support extending upwardly from the inner surface of said lower cassette half for rotatably supporting said dual-structure hub;

said outer drum of said dual-structure hub having an outer circumferential wall and said inner drum has on the lower surface thereof an inner circumferential wall and a rotation contact surface disposed in contact with the upper surface of said cylindrical support;

said inner drum and said outer drum cooperating to form an engaging groove coaxially with said dual-structure hub extending from the lower surface of said dual-structure hub substantially to half of the height of said outer circumferential wall; and

means for rotatably supporting said cylindrical support and said dual-structure hub.

4,341,366

FISHING REEL CLUTCH

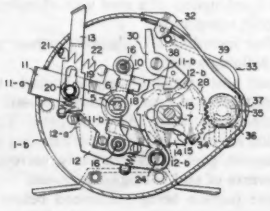
Minoru Kawada, Iruma, Japan, assignor to Olympic Fishing Tackles Co., Ltd., Saitama, Japan

Filed Jul. 2, 1980, Ser. No. 165,337

Claims priority, application Japan, Jul. 6, 1979, 54-93816[U]

Int. Cl.³ A01K *89/00*

U.S. Cl. 242—220 **11 Claims**



1. A fishing reel comprising,

a housing including side frame members;

spool means including a spool shaft supported between said side frame members;

pinion gear means being slidably mounted on said spool shaft for selectively rotating together with said spool shaft in a first position and being disengaged from rotating together with said spool shaft in a second position;

a main gear means rotatably disposed within said housing, said main gear means being operatively connected to a handle shaft means for rotation therewith and said main gear means being operably engaged with said pinion gear means;

a clutch lever means operatively mounted within said housing and operably connected to the pinion gear means for movably positioning the pinion gear means on the spool shaft to assume said second position;

rotating disk means being operatively connected to said handle shaft means for rotation therewith, said rotating disk means including at least one clutch switch pin mounted thereon;

clutch switch plate means being operatively mounted within said housing and being in releasable locking engagement with said clutch lever means for selectively preventing said clutch lever means from returning to a normal position wherein said clutch lever means is disengaged from said pinion gear means; and

clutch returning lever means being operatively mounted within said housing and being manually engageable with said clutch switch plate means to release said clutch switch plate means from locking engagement with said clutch lever means to permit said pinion gear means to assume said first position on said spool shaft;

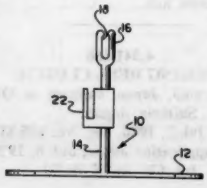
said at least one clutch switch pin being mounted for engagement with said clutch switch plate means to automatically release said clutch switch plate means from locking engagement with said clutch lever means upon rotation of said rotating disk means.

4,341,367

ROOF MOUNTED WIRE SUPPORT

Lee M. Wieland, 1403 Beach Drive Extension, Akron, Ohio 44312

Filed Nov. 7, 1979, Ser. No. 92,196
Int. Cl.³ F16L *3/22*
U.S. Cl. 248—68 R **2 Claims**



1. The combination of a roof with shingles thereon with a wire support comprising

a member including a U-shaped flat base portion, lying in and defining a plane,

a support post extending perpendicularly to said base and joined thereto at a center portion of said base,

said support post including a bifurcated wire receiving end portion for receiving a wire between leg portions thereof,

said support post being relatively narrow in a direction transverse of said U-shaped base, and

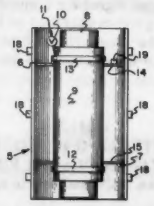
said base portion being positioned below a conventional shingle having a slot extending thereinto from a lower edge thereof and having a secured upper end, and said support post extending up through said slot, said base portion having arms extending upwardly toward the upper secured end of the said shingle, and wire support being retained in position by friction with the shingles.

4,341,368

MOLD

Donald R. Thompson, and John R. White, both of Wadsworth, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 11, 1980, Ser. No. 186,050
Int. Cl.³ B29C *5/00*; B30B *5/02*
U.S. Cl. 249—142 **2 Claims**



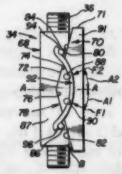
1. A mold comprising an elongated hollow cylinder having at least two parts that can be locked to form said cylinder, a core axially aligned therein and having an inflatable cover thereover, said inflatable cover having means to fix the cover on said core, upper and lower seal members positioned between said cylinder and said core with said seal members being in loose association with said cover, and a means to inflate said cover to contact and form a tight seal between said cover and said upper and lower seal members.

4,341,369

EXPANDING GATE VALVE ASSEMBLY

Danny S. Meyer, Richmond, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Apr. 25, 1980, Ser. No. 143,965
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—168 **3 Claims**



1. In a gate valve structure having a valve body with a valve chamber therein and a flow passage extending through said valve body and communicating with said valve chamber, an expandable gate assembly mounted within said valve chamber for movement in a collapsed condition between open and closed positions with respect to said flow passage, said gate assembly including a gate element and a segment which are expanded away from each other at said open and closed positions and are provided with ports which are aligned with one another and the flow passage in said open position, said gate element having a pair of slide surfaces defining a V-shaped recess and said segment having a complementary V-shaped face defining an apex fitting in said V-shaped recess in conformity therewith when said gate element and segment are in a fully collapsed condition, said segment being slidably movable on either of said slide surfaces to effect the expansion or collapse of said gate assembly; an improved means for continu-

ously urging said gate element and segment to a fully collapsed position, said means comprising:

a pair of spaced apart retaining lugs extending from a side of said gate element and aligned in the direction of movement of said gate assembly, said retaining lugs being equi-spaced from and disposed on opposite sides of a transverse axis passing through the apex of said V-shaped recess;

an elongate bowed spring;

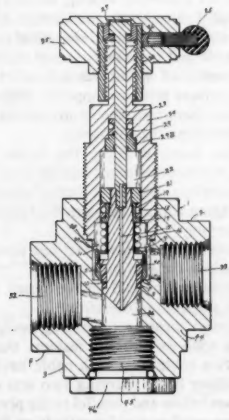
a pair of spaced apart flexing lugs extending from a side of said segment and aligned in the direction of movement of said gate assembly and offset from the alignment of said retaining lugs, said flexing lugs being closer spaced than said retaining lugs and equi-spaced from and disposed on opposite sides of a transverse axis passing through the apex of said V-shaped face, said spring being disposed to be in tension on said sides of said segment and gate element with its opposite end portions adjacent its ends engaged by said respective retaining lugs on the sides of said retaining lugs remote from the apex of said V-shaped recess and its central bowed section engaged by both said flexing lugs when in the collapsed condition of said gate assembly and on the sides of said flexing lugs remote from the apex of said V-shaped face whereby said spring continuously urges said gate assembly to the fully collapsed condition and the movement of the gate assembly to the expanded condition associated with said open and closed positions results in said spring engaging and acting with flexing force on only that one of said flexing lugs which leads with respect to the direction of movement of said segment relative to said gate element.

4,341,370

HIGH PRESSURE, THREE STAGE, BALANCED VALVE

George W. Banks, 24824 43rd Ave., S. Kent, Wash. 98031

Filed Nov. 20, 1980, Ser. No. 208,670
Int. Cl.³ F16K *39/02*
U.S. Cl. 251—282 3 Claims



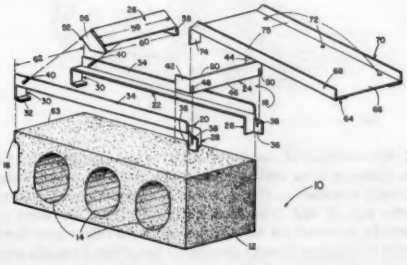
3. A high pressure, three stage, balanced valve, comprising, (a) a valve body having a cylindrical wall structure defining a central valve closure member assembly chamber communicating with a first supply port, said chamber having a bottom concentrically counter bored, forming a 45 degree poppet valve seating surface providing a smooth entrance to a smooth walled circular orifice control chamber communicating with a second supply port, said supply ports communicating with each other when valve is open; (b) a barrel member detachably received in the upper portion of said central chamber, said barrel member having a chamber centrally disposed therein, defining an upper balance chamber which allows a balance seal, mounted on the upper portion of said closure member assembly to be moved up and down therein, the remaining upper portion of said barrel member is concentrically drilled and fashioned to accommodate a control spindle and a control spindle moving seal; (c) an elongated metering pin having said control spindle attached to the upper end and extending up through said balance chamber, through said moving seal to atmosphere, a compensating balance spindle is centrally attached to the lower end of said metering pin and extending out through said orifice control chamber through a moving seal and out to atmosphere; (d) a pressure communicating by-pass is provided between said upper balance chamber and said lower orifice control chamber; (e) said metering pin having a circular horizontal groove of ample width formed in the outside diameter, just above the shut-off portion of said pin, the upper wall of said groove being a few thousandths of an inch larger in outside diameter than the outside diameter of the lower groove wall; (f) a self lubricating teflon bushing under pressure is carried in said groove, the lower portion of the outside diameter of said teflon bushing being slightly conical, the outside lower end diameter of said teflon bushing conforming to said lower groove wall diameter and tapering up to an upper straight sided portion of said teflon bushing having an outside diameter conforming to the outside diameter of said upper groove wall; (g) a 45 degree, second stage poppet valve formed on the lower end of a heavy walled hollow cylinder, the inside diameter of said hollow cylinder conforming to and covering the outside diameter of said teflon bushing and said upper groove wall; (h) the remaining length of said elongated metering pin, above said upper groove wall is reduced in diameter and a hollow retaining cap is slipped over said metering pin and attached to the upper portion of said hollow cylinder; (i) a coil compression spring is slipped over said metering pin and compressed between said retaining cap and the balance seal assembly; (j) the first stage closure takes place when said metering pin moves down, closing the control orifice, further downward movement of said metering pin causes said second stage poppet valve to close with said 45 degree poppet valve seat, said metering pin co-acting with said compression spring allows said metering pin to continue down smoothly telescoping a lower portion of said self-lubricating teflon bushing into said control orifice, the diameter of said orifice being a few thousandths of an inch smaller than the major diameter of said teflon bushing, the hydraulic advantage in said telescoping multiplies the contact pressure per square inch of said teflon bushing many times over that of the downward control force in pounds per square inch, supplying the needed high seat contact pressure on the inside walls of said control orifice for the third stage final and positive shut off.

4,341,371

CAR RAMP AND SUPPORTING DEVICE

Thomas B. Rotella, 22 E. 7th St., Clifton, N.J. 07011

Filed Dec. 15, 1980, Ser. No. 216,772
Int. Cl.³ E02C *3/00*
U.S. Cl. 254—88 3 Claims



1. An improved vehicle ramp and lifting device comprising: (a) a construction block to form an improved vehicle ramp and

lifting device, the construction block having first and second surfaces parallel to each other and extending in the direction of the longitudinal axis of the block from one end thereof, at, at least, said first surface; and

(b) a framework including:

(i) first and second brackets, each having a first main portion and first and second tabs disposed at right angles to, and at opposite ends of, said main portion of the bracket, said main portion spanning the length of the block in the direction of its longitudinal axis, said first and second tabs configured to conform to the contour of the block at a respective end thereof, whereby said first and second brackets are restrained in movement relative to the block, in the direction of the longitudinal axis;

(ii) a first tie bracket including a second main portion and first and second ends formed at right angles to said second main portion, the distance between said first and second ends being substantially equal to the width of said block, said first and second brackets and said tie bracket, including cooperating means for connecting said tie bracket to one end of each of said first and second brackets, said first and second ends of said tie bracket coacting with the sides of the block to restrain movement of said first and second brackets relative to the block in a direction perpendicular to the longitudinal axis;

(iii) a second tie bracket, said first and second brackets and said second tie bracket, including cooperating means for connecting said second tie bracket to the remaining end of said first and second brackets, said second tie bracket is connected to said first and second brackets, to restrain movement of the remaining end of said first and second brackets relative to the block in a direction perpendicular to the longitudinal axis; and

(iv) a ramp including means for removably connecting one end of said ramp to the end of the first and second brackets connected by said first tie bracket;

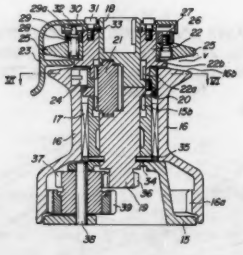
said main portion of said first and second brackets disposed upon the first surface of the block.

4,341,372

AUTOMATICALLY MESHING SHEET WINCH

Masumi Sugioka, Shimada, Japan, assignor to Asahi Malleable Iron Co. Ltd., Tokyo, Japan

Filed Aug. 4, 1980, Ser. No. 175,105
Claims priority, application Japan, Sep. 18, 1979, 54-118717
Int. Cl.³ B66D *1/30*
U.S. Cl. 254—353 **18 Claims**



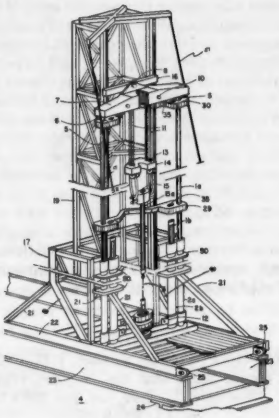
1. An automatically meshing sheet winch, comprising a fixed base frame, a main shaft journalled by the base frame, a drum rotatably mounted on the base frame, a grooved pulley formed at one end of said drum for meshing a rope, an offset gear rotatably mounted on said main shaft, said offset gear having an axis of rotation thereof parallel to but offset from the axis of rotation of said main shaft so that teeth of the offset gear partly extend to outside of the circumferential surface of the main shaft, an internal gear formed on said base frame so as to mesh said offset gear, and a rope guide rotatably mounted on said base frame and having another internal gear integrally formed therewith, said other internal gear also meshing said gear carried by the main shaft.

4,341,373

HYDRAULIC WELL DERRICK WITH CABLE LIFTS

William J. Mouton, Jr., Box 10515, New Orleans, La. 70123

Division of Ser. No. 800,486, May 25, 1977, Pat. No. 4,170,340.
This application Sep. 28, 1979, Ser. No. 80,047
Int. Cl.³ B66D *3/08*
U.S. Cl. 254—386 **9 Claims**



1. In a well derrick system for raising, lowering and suspending lengths of well pipe, wherein the changes in elevation are secured through the use of vertical, elongated hydraulic cylinders with rams arranged in pairs mounted on the face of the derrick, each member of a pair being parallel to the well's centerline, the members being on opposite sides of the centerline and equidistant therefrom, the improvement comprising in cooperative combination the following:

(a) an equalizer beam bridging the heads of the rams, mounted on a horizontal pivot having an axis intersecting the well centerline, the pivot being located above the points of bridging contact between the beam and the rams, the beam carrying

(b) sheave means comprising at least one sheave on a horizontal axis below the said pivot, and

(c) cable means carried on said sheave means, and extending down to and suspending therefrom

(d) travelling beam means for carrying wellpipe clamping and working tools in working fashion, the cable means comprising two cable sets, each cable having two ends, and the equalizer beam carrying two sets of sheaves on horizontal axes below and parallel to the pivot, and spaced apart from one another equidistantly from the well centerline, one of the cable sets being strung over one of the sets of sheaves, and the other set of sheaves holding the other cable set, and

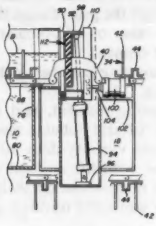
(e) at least one pair of hydraulic cylinders mounted on the derrick with their rams uppermost, said cylinders being supported near their bottoms on a foundation structure, the upper ends of each ram of a pair that is in use forcing upwardly against the under faces of said equalizer beam, and

(f) diagonal truss members coupled to the cylinders extending downwardly from brackets attached to the cylinders to spaced points on the foundation structure, forming with any intervening derrick structure a bridge truss type structure, whereby the cylinder loads are transferred away from the cylinder bottoms.

4,341,374
WATER TABLE WITH LOW PROFILE CONVEYOR SYSTEM

John A. Seelinger, Beaver, Pa., assignor to Anderson Engineers, Inc., Carnegie, Pa.

Filed Mar. 3, 1980, Ser. No. 126,551
Int. Cl.³ B23K 7/08
U.S. Cl. 266—49 23 Claims



1. A water table and submersible conveyor system comprising;

a water table having opposed end walls, each of said end walls having an opening therethrough;

a conveyor passing through the openings;

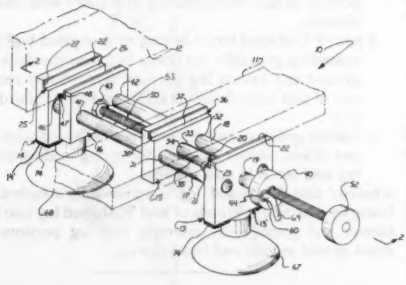
end doors of a size sufficient to cover the openings, said end doors having means for allowing the conveyor to pass through the end doors when they cover the openings; and

sealing means on the end doors for engaging and forming a watertight seal between the conveyor and the end doors such that the water level in the table can be raised above the bottom of the openings.

4,341,375
DUAL VISE FOR SKIS AND THE LIKE

Mario Romanin, 3230 Somia Dr., Parma, Ohio 44134

Filed May 4, 1981, Ser. No. 260,419
Int. Cl.³ B25B 1/20
U.S. Cl. 269—43 6 Claims



1. A vise having multiple jaws for quickly clamping and releasing a pair of articles such as skis or the like, comprising,

(a) first and second fixed upstanding end jaws fixedly disposed in longitudinally spaced apart relationship at a predetermined distance greater than the combined widths of said articles,

(b) a pair of parallel guide rails in transversely spaced apart relationship to hold said fixedly disposed jaws apart,

(c) first and second movable upstanding jaws slidably disposed on said guide rails, each independently movable with respect to the other,

(d) a tube slidably inserted through said first fixed upstanding jaw, said tube being longitudinally reciprocable so as to move said first movable jaw back and forth along said guide rails,

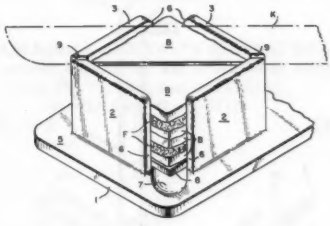
(e) a rod, longitudinally translatable within said tube so as to move said second movable jaw back and forth along said guide rails, said rod being at least partially threaded and having one end rotatably disposed in said second movable jaw, and,

(f) releasable locking means, to selectively release and lock said movable jaws relative to one another so as to negate free travel of said movable jaws relative to each other except by rotation of said rod.

4,341,376
SANDWICH ASSEMBLING JIG

Roger Germinario, 124 Pleasant Ave., East Bridgewater, Mass. 02333

Filed Jan. 27, 1981, Ser. No. 228,751
Int. Cl.³ B23Q 3/00
U.S. Cl. 269—288 9 Claims



1. A jig for assembling sandwiches comprising:

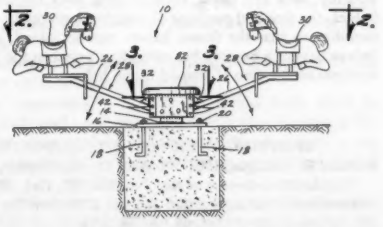
a base having a planar surface, and

walls upstanding from the base surface around a sandwich-shaped volume for receiving bread slices stacked upward from the base with a filling between each two slices, the walls having upright edges spaced apart to form a finger access opening to the sandwich volume to allow removing and holding the assembled sandwich with filling from the jig wherein four walls surround a generally rectangular volume with access openings formed at opposite corners of the walls and wherein other corners of the walls are spaced apart less than at the finger access corners to form aligned slits for receiving a knife to cut a sandwich in half diagonally.

4,341,377
SEESAW

Paul W. Ahrens, Grinnell, Iowa, assignor to Miracle Recreation Equipment Company, Grinnell, Iowa

Filed Sep. 2, 1980, Ser. No. 183,050
Int. Cl.³ A63G 17/00
U.S. Cl. 272—54 4 Claims



1. A seesaw comprising at least a pair of oppositely extending arms having seats at the outer ends thereof, said arms being connected to the sides of a frame enclosure which embraces a support post having sides and which is connected thereto for resilient up and down pivotal movement by three spaced rub-

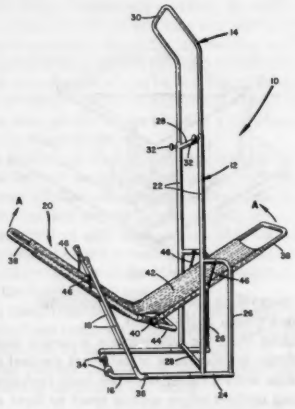
ber blocks per arm which have their opposite ends mounted on pins carried on the opposing sides of the enclosure and post, said rubber blocks being cylindrical and having oppositely disposed axial openings at opposite ends in which said pins are received, there being three rubber blocks per arm, two being in a common horizontal plane below the third centrally disposed above and therebetween.

4,341,378

MULTIPURPOSE EXERCISER DEVICE

Ferenc I. Agyagos, 3-21-5, Akasaka, Minato-ku, Tokyo, Japan

Filed Sep. 22, 1980, Ser. No. 189,330
Claims priority, application Japan, Sep. 25, 1979, 54-132362
Int. Cl.[3] A63B *1/02, 23/02*
U.S. Cl. 272—62 **5 Claims**



1. A compound multipurpose exerciser device on which reclining waist, side and hip exercises can be performed, said exerciser device comprising a base frame member supporting a pair of vertically extending frame support elements at one end of said base frame, said base frame member having a pair of separate spaced-apart vertically extending legs that have attached thereto an inverted U-shaped hanger frame member, said frame support elements being attached to said legs at a substantially intermediate location thereof, said U-shaped hanger frame being positioned higher than said frame support element for use in the performing of spine-stretching and chin-up exercises, the upper end of the inverted U-shaped hanger frame member being bent slightly inwardly towards the other end of the base frame for improved stability; and including a substantially horizontal exercising cot which is operably supported by upwardly extending portions of said base frame member, said cot being formed from two U-shaped frame halves, the free end portions of which are pivotally connected together so that the frame halves can be folded, said frame halves having a bracing bar extending between the pivot connections of the two U-shaped frame halves.

4,341,379

SPOTTING DECK FOR A TRAMPOLINE

Michael R. Milligan, 1901 W. Main St., St. Charles, Ill. 60174

Continuation-in-part of Ser. No. 949,787, Oct. 10, 1978, abandoned. This application Jul. 25, 1980, Ser. No. 172,186
Int. Cl.[3] A63B *5/18*
U.S. Cl. 272—65 **7 Claims**

1. In a backyard trampoline of the type having a rectangular resilient surface-supporting frame with a pair of rigid sides of equal length each side having a rigid outer member connected to said side in spaced relation along the entire length of said side, the improvement of a supporting and viewing end structure removably attachable to said sides at each end of said trampoline, said structure comprising:

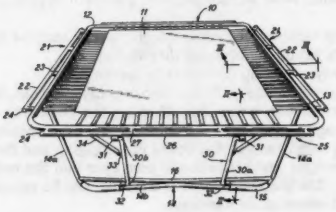
a pair of downwardly extending first sleeves attached beneath and at opposite sides of said frame inwardly of each said end structure;

a W-shaped leg having a pair of upper ends respectively removably received in said first sleeves and having a base portion resting on the ground;

each said end structure comprising a pair of spaced parallel tubular members, one of said tubular members adapted to form together with the pair of sides the surface-supporting frame, and the other of said tubular members forming a foot-supporting element;

a plurality of connecting members extending between said tubular members,

said foot-supporting element, said connecting members and said one of said tubular members cooperatively forming an end viewing deck adapted to be substantially coplanar with the resilient surface and said end viewing deck in combination with said outer members connected to said sides forming a segmented viewing



and spotting deck which completely surrounds said resilient surface;

a pair of spaced lateral second sleeves attached to and extending beneath said foot-supporting element so as to divide said foot-supporting element substantially into thirds;

a pair of spaced lateral third sleeves carried on said base portion of said W-shaped leg in registry with said second sleeves;

a pair of U-shaped struts having an elongated bight portion extending generally vertically between the deck and the ground and having leg portions respectively received in one of said second sleeves and in one of said third sleeves; and

a retainer spring connected between each said strut and said one of said tubular members for spring loading and retaining said struts in said sleeves

whereby said W-shaped leg is removably attached to said frame by inserting said ends of said W-shaped leg into said first sleeves and respectively inserting said leg portions of said struts in said second and third sleeves.

4,341,380

BODY CELL THERAPEUTIC DEVICE

Walter J. Sauder, 5551 Randolph Blvd., San Antonio, Tex. 78233

Filed Oct. 29, 1980, Ser. No. 201,743
Int. Cl.[3] A63B *5/08*
U.S. Cl. 272—65 **13 Claims**

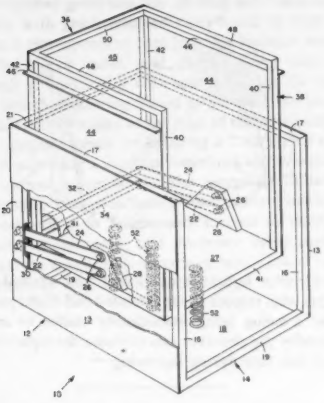
1. A therapeutic device to apply measurable and controllable repetitions of G-force to a body and its components to effect strengthening and functional benefits thereof comprising:

a platform having a generally horizontal surface;

a base;

support means connecting said platform to said base to maintain said platform rigidly horizontal during oscillations of up and down movement initiated and sustained by any means;

said support means including at least two attachment blocks rigidly attached to said platform with two upper and two lower parallel rocker arms having first ends thereof pivotally attached to said attachment blocks, said rocker arms



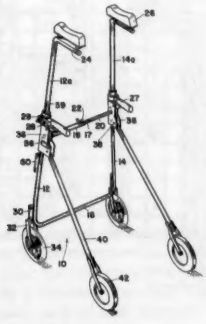
extending to and pivotally attaching via second ends thereof to said base by means of an interconnection between said second ends, said interconnecting means rigidly connecting at least one pair of said rocker arms.

4,341,381

INVALID WALKER

Kenneth H. Norberg, 1161 Butterfield Rd., San Anselmo, Calif. 94960

Filed Feb. 23, 1981, Ser. No. 237,243
Int. Cl.³ A61H *3/04*
U.S. Cl. 272—70.4 **7 Claims**



1. An invalid walker comprising:

a U-shaped frame including a bottom cross member and a pair of upright posts;

a front wheel carried on the lower portion of each of said posts;

crutch shoulder support members mounted on the upper ends of said posts;

handgrips extending rearward from said posts intermediate the heights thereof;

rearwardly opening channel member means secured to each post intermediate the height thereof and below said handgrips;

trailing legs having rear wheels on one end portion thereof with the other end portion pivotally connected between said channel member means to enable them to be pivoted between an extended trailing position with the rear wheels disposed a considerable distance rearward of said posts to support the user and a collapsed position wherein they are disposed along and closely adjacent the lower rear portion of said posts;

the other end portion of said trailing legs having integral stop extensions on said trailing legs angling upward therefrom to engage the rear of said posts so as to limit the pivoting of said trailing legs when said extended trailing position has been reached;

the sides of said channel member means engaging said stop extensions when said trailing legs are in their extended position to act as restraining members so as to prevent lateral movement thereof; and

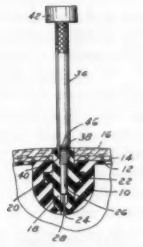
latch means on the upper portions of said channel member means engageable over the upper ends of said stop extensions to secure said trailing legs in their extended positions.

4,341,382

INFLATABLE BALL AND VALVE SEALING DEVICE

Michael C. Arnold, 224 Charles, Ann Arbor, Mich. 48104

Filed Jan. 30, 1980, Ser. No. 116,940
Int. Cl.³ A63B *41/00, 41/12*
U.S. Cl. 273—65 C **5 Claims**



1. In the combination of a bladder valve extending through the wall of an inflatable ball and a removable plug adapted to seal the bladder valve,

the plug comprising a smooth cylindrical body sized to frictionally and sealingly engage the central passage of the bladder valve and a head formed on the body at the upper end thereof, said head including a thread formed thereon.

4. A tool adapted to insert and remove a removable plug having an externally threaded head from the bladder valve and an inflatable ball,

the tool comprising a tubular body, an internally threaded socket at one end of the tool body and an external chamfer on the tool body at the internally threaded end, said external chamfer tapering from the outside diameter of the tool body to the end to assist in moving the wall of the bladder valve passage way from the external thread on the head of the plug.

5. A removable plug and tool combination adapted to seal the bladder valve of an inflatable ball,

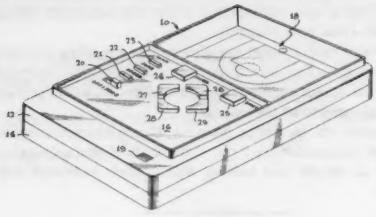
the plug comprising a smooth cylindrical body sized to frictionally and sealingly engage the central passage of the bladder valve and a head formed on the plug body at the upper end thereof, said head having an external thread thereon,

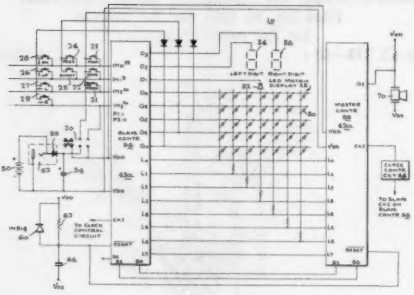
the tool comprising a tubular body, an internally threaded socket at one end of the tool body adapted to engage the external thread on the plug head, and an external chamber on the tool body at the internally threaded end, said external chamfer tapering from the outside diameter of the tool body to the end to assist in moving the wall of the bladder valve passage away from the external thread on the head of the plug.

4,341,383
ELECTRONIC BASKETBALL GAME

David A. Reichert, Carson, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Aug. 4, 1980, Ser. No. 174,986
Int. Cl.[3] A63F 9/00
U.S. Cl. 273—85 G 15 Claims





1. An electronic basketball game comprising a display, including a representation of a basket, input means, and means for controlling the display to represent offensive and defensive players and a ball, the means for controlling the display being responsive to the input means for moving the representations of the defensive players, and in which the means for controlling the display includes means for causing the display to provide scores for the teams, means for determining the distance from the basket to a player shooting a field goal, and means for determining the point value of a field goal as a function of the distance from the basket to the player shooting the field goal.

4,341,384
GOLF SWING DIAGNOSTIC APPARATUS

James D. Thackrey, 13852 Dali La., Santa Ana, Calif. 92705

Filed Feb. 23, 1981, Ser. No. 236,706
Int. Cl.[3] A63B 69/36
U.S. Cl. 273—186 A 6 Claims

1. Apparatus to be used in evaluating the swinging of a golf club with regard to the squareness of the golf club's face to the intended ball-flight path at the point in the golf club swing at which the club face makes contact with the ball, comprising

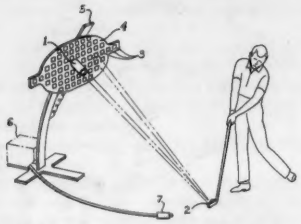
a source of electromagnetic radiation, and

reflective material backed with adhesive so as to be affixed temporarily to any golf club's face, and

a multiplicity of sensor-marker assemblies each of which comprises

a sensor assembly which reacts to the electromagnetic radiation from said source by closing an electrical circuit; and

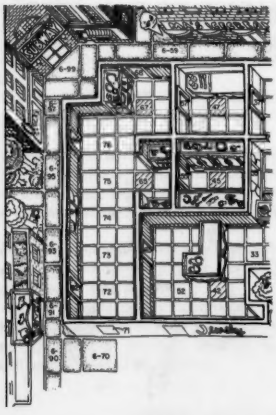
a marker light adjacent to said sensor-marker assembly and disposed to be switched on when the electrical circuit is closed, in which radiation from said source must be reflected from said reflective material to reach any of said multiplicity of sensor-marker assemblies, whereby during a single golf swing only certain ones of said sensor-marker assemblies receive radiation and these certain ones may be identified as having received radiation by their having closed the electrical circuit and switched on their associated marker light, the location of the switched-on marker lights with respect to the intended ball-flight path existing after a swing being immediately visible to an observer whereby the observer can evaluate the squareness of the golf club face during the swing.



4,341,385
ELECTRONIC BOARD GAME APPARATUS

Holly T. Doyle; Robert O. Doyle, both of 77 Huron Ave., Cambridge, Mass. 02138, and Wendl Thomis, 383 Old Beaver Brook Rd., Acton, Mass. 01718

Filed Jan. 24, 1980, Ser. No. 114,905
Int. Cl.[3] A63F 3/00
U.S. Cl. 273—237 7 Claims



1. Game apparatus comprising:

playing field means carrying visible indicia defining a multiplicity of locations of several different types and permissible paths of movement between locations, said playing field means being adapted for receiving tokens representing the positions of players upon the field;

a digital processor;

means interconnected with said processor and comprising a fixed table of information representing the various playing field locations together with information representing the possible movements to neighboring locations consistent with said indicia;

sound generating means energizable by said processor for generating a selected one of a plurality of predetermined

sounds each of said predetermined sounds being characteristic of one type of location;

writable memory means for storing a value representing a location on said playing field;

means, operable upon player initiation and including a random number generator, for altering said value in conformance with predetermined rules based on said table to effect a corresponding change in the location represented by the stored value, said change being unpredictable though in conformity with said rules, and for activating said sound generating means to generate the preselected sound corresponding to the type of the new location; and

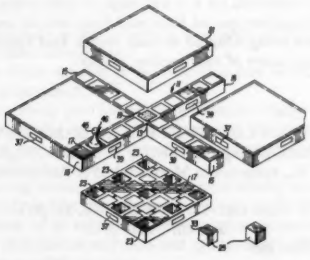
player operable means for initiating a CAPTURE operation and designating a location submitted to correspond with the current stored value, the repertoire of said sound generating means including also predetermined sounds corresponding to failure and success in matching the current stored value, said processor being operative to initiate the appropriate success or failure sound in the case of match or mismatch respectively.

4,341,386

GAME BOARD APPARATUS HAVING REMOVABLE PLAYING PIECE MOVEMENT AREAS

Jacob J. Kleva, 10 New York Ave., Cumberland, R.I. 02864

Filed Jul. 15, 1980, Ser. No. 169,201
Int. Cl.³ A63F 3/00
U.S. Cl. 273—239 **26 Claims**



1. A game apparatus comprising:

a game board including, on a top surface thereof, a plurality of playing piece movement areas, at least some of said playing piece movement areas being included in an area defined by a channel extending vertically through said game board, each of said channels being adapted to receive a respective game piece, at least some of said playing piece movement areas being grouped into a plurality of playing piece movement area groups by a plurality of first indicium which identify each said group by interconnecting playing piece movement areas within each said group, each of said groups being separate from each of said other groups by the absence of any indicia interconnecting said groups; and,

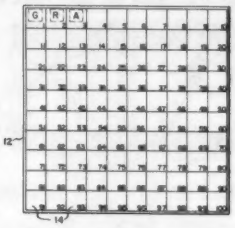
a plurality of game pieces adapted to respectively fit into said channels, each of said game pieces having on at least an upper face thereof a respective second indicium which, with second indicium from others of said game pieces, defines indicia patterns to be traversed by a movable playing piece moving among said playing piece movement areas.

4,341,387

BOARD WORD GAME APPARATUS AND METHOD

Theodore M. Freyman, 9 Mill Rd., Melrose Park, Pa. 19126

Filed Jul. 14, 1980, Ser. No. 168,004
Int. Cl.³ A63F 3/00
U.S. Cl. 273—240 **8 Claims**



2. A method of playing a game on a playing surface which is divided into a predetermined plurality of discrete areas bearing respective numerals in sequence, comprising the steps of:

(a) selecting at random a predetermined number of letters of a give alphabet,

(b) marking said selected letters on respective desired lower-numbered ones of said areas in a sequence in which they are in relative positions to form a word or part of a word,

(c) then selecting again at random said predetermined number of letters of said alphabet,

(d) then marking said last-mentioned selected letters in respective desired unoccupied other ones of said areas bearing numerals higher than the next previously selected areas and in a sequence in which they are in relative positions to form a word or part of a word,

(e) repeating said steps (c) and (d) until the player does not desire to mark a letter of the latest selection in an area bearing a numeral higher than those marked in the next previously selected areas to form a word or part of a word, whereupon the player must mark a letter or letters of said latest selection in a respective unoccupied lower-numbered area or areas of said surface; and

(f) subsequently repeating steps (c), (d) and (e) until the occurrence of a predetermined event.

4,341,388

DRIVING GAME BOARD APPARATUS

John Carter, 1157 Marine Dr., West Vancouver, British Columbia, Canada

Filed Jan. 19, 1981, Ser. No. 225,872
Int. Cl.³ A63F 3/00
U.S. Cl. 275—248 **7 Claims**

1. Driving game board apparatus to be played by the use of chance number indicating means, comprising a game board;

an endless two-way roadway course on the board spaced outwardly from and extending generally around a central area of the board, said roadway course having an inner lane and an outer lane extending throughout the length thereof;

a plurality of individual home areas arranged around the central area of the board, each of said home areas having an identification different from the others of said home areas,

a plurality of playing pieces simulating vehicles, one for each home area and having the identification of said home area,

an in-out pathway extending between each home area and the roadway course;

means directing a playing piece on a first group of said in-out pathways to the outer lane;

means directing a playing piece on a second group of said pathways to the inner lane;

a plurality of inward detour roads extending from the inner and outer lanes to said central area;

each of said outward detour roads being marked at an outer end to direct playing pieces onto the inner lane and onto the outer lane of the roadway course;

a plurality of outward detour roads extending from the central area to the inner and outer lanes;

each inward detour road having the road indicator section respectively in the inner and outer lanes, said road indicator section of each inward detour road having two different identifications the same as two different identifications of home areas, and the identifications of the road indicator sections of each of said inward detour roads being different from the identifications of the road indicator sections of all the other of said inward detour roads; and

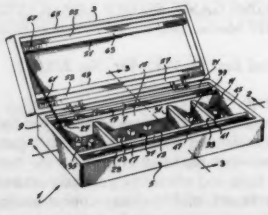
a plurality of indicator sections in succession on the pathways, the roadway course and the inward and outward detour roads and containing different driving instructions, penalties and awards.

4,341,389

WORD FINDING AND GUESSING GAME

Bernard Dumont, 95 Bellevue, Apt. 306, Sherbrooke, Quebec, Canada (J1J 3Z2)

Filed May 1, 1980, Ser. No. 145,465
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—265 **1 Claim**



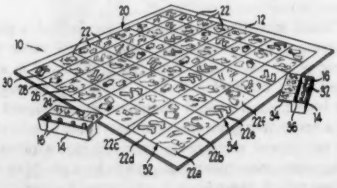
1. A game whereby one player tries to guess a word selected by another player, which comprises a chest including a lid, said chest having a front side and a rear side, a first U-shaped member defining a first channel disposed longitudinally in said chest along said front side and a second U-shaped member defining a second channel disposed longitudinally in said chest along said rear side, a first column of consecutively aligned numerals on an upper edge of said first U-shaped member adjacent said front side, a first plurality of cubes carrying letters of the alphabet adapted to be disposed within said first channel so that a letter of said first plurality of cubes carrying letters can be placed opposite a numeral of said first column thereby enabling a first word selected by said one player and formed of a plurality of letters taken from said first plurality of cubes carrying letters, to be placed by said one player opposite consecutive numerals of said first column, the first one of said consecutive numerals of said first column being selected at random by said one player in said first column of consecutively aligned numerals, a second column of consecutively aligned numerals on an upper edge of said second U-shaped member spaced from from said rear side, a second plurality of cubes carrying letters of the alphabet adapted to be disposed within said second channel so that a letter of said second plurality of letters can be placed opposite a numeral of said second column, thereby enabling a word selected by said another player and formed of a plurality of letters taken from said second plurality of cubes carrying letters to be placed by said one player opposite consecutive numerals of said second column, the first one of said consecutive numerals of said second column being selected at random by said another player, said game also comprising blank cubes to indicate a wrong guess and cubes carrying question marks to indicate position of a letter opposite a specific numeral, transverse partitions between said first and second U-shaped members to define four containers, one said container being provided for said first and second plurality of cubes carrying letters of the alphabet, a second container to contain letters rejected by said one player as not forming part of the word selected by said another player and to be guessed by said one player, a third container to contain said blank cubes, and a fourth container to contain said question marks, said lid having a front side and a rear side, a first inverted U-shaped member defining a third channel disposed longitudinally in said lid along said rear side of said lid, a first additional column of numerals on a lower edge of said first inverted U-shaped member adjacent said rear side of said lid, said blank cubes being adapted to slide within said third channel, and indicate score of said one player, a second inverted U-shaped member defining a fourth channel disposed longitudinally in said lid along said front side of said lid, a second additional column of numerals on a lower edge of said second inverted U-shaped member spaced from said front side of said lid, said blank cubes being adapted to slide within said fourth channel and indicate score of said another player.

4,341,390

PATTERN LOCATION BOARD GAME DEVICE

Alan A. Hicks, Chicago, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 17, 1980, Ser. No. 197,919
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—265 **10 Claims**



10. A board game device comprising:

a plurality of playing pieces;

a game surface bearing matrix of playing positions, each playing position bearing indicia representative of one variable of a first and one variable of a second set of variables, each variable set including a plurality of variables, each variable indicated by said indicia on said playing surface, said game surface including a plurality of playing positions, bearing substantially identical indicia;

means for indicating each of said first set of variables separately of said game surface;

means for indicating each of said second set of variables separately of said game surface;

means for indicating a geometric pattern of indicia representative of said first set of said variables on said game surface by associating said first set indicating means with said second set indicating means; and

said first set of variables including at least four variables and said second set of variables including at least four variables, said game surface containing at least four playing positions bearing identical indicia representative of each combination of one variable of said first set with one variable of said second set.

4,341,391

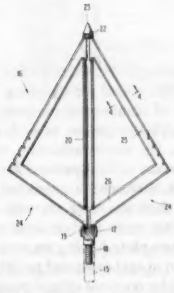
REPLACEABLE BLADE ARROWHEAD

Jeffrey J. Anderson, P.O. Box 11, Pottersville, N.J. 07979

Filed Jun. 5, 1980, Ser. No. 156,751

Int. Cl.³ F41B *5/02*

U.S. Cl. 273—422 **11 Claims**



1. Arrowhead having generally L-shaped individually detachable blades, comprising:

a tubular body adapted to be secured at one end to the end of an arrow shaft;

said body being provided with circumferentially arranged pairs of axially spaced axially extending slots, each of said pairs of slots receiving therein the respective free ends of one of said L-shaped blades;

and securing means including a member axially movable on said body in one direction to positively lock each of the free ends of all of said blades against axial movement in either direction in said slots and against removal from said slots in a radial direction

said axially movable member permitting removal of said blades when moved in the opposite direction.

4,341,392

PLASTICS PIPES HAVING WALLS WITH LENGTHWISE EXTENDING CHANNELS

Jan P. van Dongeren, Bergentheim, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

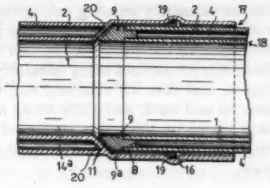
Division of Ser. No. 904,218, May 9, 1978, Pat. No. 4,280,534, which is a continuation of Ser. No. 728,117, Sep. 30, 1976, abandoned. This application Dec. 29, 1980, Ser. No. 221,360

The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.

Int. Cl.³ F16J *15/10*

U.S. Cl. 277—207 A **4 Claims**

1. A plastic pipe system adapted for underground use comprising at least a first plastic pipe and a second plastic pipe interconnected with each other, said first and second plastic pipes each comprising an inner wall and an outer wall, said walls being interconnected by connecting partitions forming channels extending lengthwise of said first and second pipes, at least one end of said first pipe having a conical channel closing wall formed by a diverging conical portion of its inner wall directed toward and integrally formed with its outer wall adjacent said end of said first pipe and a generally cylindrical socket means integrally formed with the walls of the first pipe and extending for a distance beyond the end of said first pipe for receiving internally therein a mating end of said second



pipe, said inner and outer walls, said partitions, said channel closing walls and said socket means of said first pipe all being integrally formed together in one piece from the same plastic material, said second pipe having a converging conical channel closing wall at the mating end thereof for engaging the diverging conical portion of said first pipe.

4,341,393

HAND CART

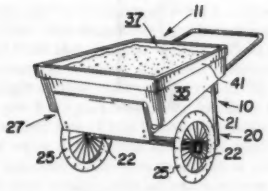
Donald J. Gordon, Rockwood; Frank H. Johnson, Cambridge, both of Canada; George L. Schick, Easton, Conn., and J. David Smart, Cambridge, Canada, assignors to Slater Steel Industries Ltd., Hamilton, Canada

Filed Feb. 15, 1979, Ser. No. 12,223

Claims priority, application Canada, Dec. 18, 1978, 318117

Int. Cl.³ B62B *1/02*

U.S. Cl. 280—47.26 **7 Claims**



1. A hand cart, comprising:

(A) a truck which comprises a pair of elongate straight side frame members; a plurality of transverse members connected between said side frame members; a handle connected to the rear ends of said side frame members; a truck nose connected to the front ends of said frame members; an elongate ground engaging frame member connected to each of said side frame members, said ground engaging member including a rear section extending downwardly from said rear end, a ground engaging section in the form of an elbow, and a front section extending upwardly and forwardly from said ground engaging section to said front end; an axle connected between said front sections intermediate, and at a substantial distance from, said ground engaging sections and said front end; and a pair of wheels mounted on said axle;

(B) an upwardly open container having front, rear, and side walls mounted on said truck, positioned above said wheels and disposed relative to the axle such that the center of gravity of the truck, the container, and the contents of the container lies substantially vertically above the axle in order to minimize the lifting force which needs to be exerted by the user of the hand cart on the handle for

raising the ground engaging members from the ground when it is desired to wheel the hand cart;

(C) the depth of said container increasing from the rear to the front thereof, said front wall being upwardly and forwardly inclined and disposed adjacent and at least approximately parallel to said nose to facilitate loading of said upwardly open container when said truck is tilted to lower said front wall onto the ground; and

(D) means for releasably securing said upwardly open container on said frame, said securing means including a pair of projections on the front wall of said upwardly open container, said projections being releasably engageable in openings in said nose for retaining said upwardly open container on said truck, and quick-acting manually operable catch means on the upper portion of said truck for releasably engaging the rear wall of said upwardly open container.

4,341,394

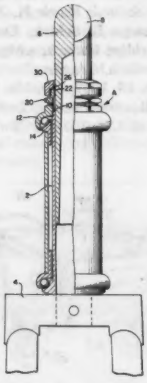
SIMULTANEOUS CONNECTION BETWEEN HANDLEBAR AND STEERING FORK OF BICYCLES

Maximino R. Cabeza, Calle Central 709, Miramar, Santurce, P.R. 00907

Continuation-in-part of Ser. No. 87,497, Oct. 23, 1979. This application Apr. 10, 1980, Ser. No. 138,902

Int. Cl.³ B62K *21/18*

U.S. Cl. 280—279 **1 Claim**



1. In combination with the upwardly extending hollow cylindrical stem of the steering fork of the front wheels of a bicycle, and the downwardly extending cylindrical handlebar stem which is positioned within the fork stem, means for connecting the two stems comprising:

a. a contractile clamping ring surrounding and connected by threads to the upper end of the fork stem and having an un-threaded internal surface surrounding the adjacent part of the handlebar stem, and having a frusto-conical external surface,

b. a locknut loosely surrounding the handlebar stem and connected by threads to the clamping ring, and having a frusto-conical internal surface engaging the frusto-conical external surface of the clamping ring whereby screw threaded movement of the nut toward the ring contracts the ring to cause engagement of the un-threaded internal surface of the clamping ring with the handlebar stem,

c. the clamping ring and the locknut having axially extending cuts and notches, respectively, which may be brought into radial alignment by relative threaded movement of the clamping ring and locknut,

d. and a locking means such as a cotter pin positioned in the aligned cuts and notches to lock the clamping ring to the locknut and thereby lock the handlebar stem to the fork stem.

4,341,395

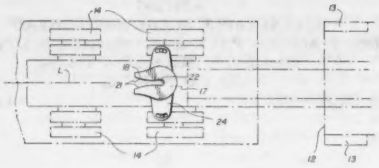
ANTI-JACKKNIFING CONTROL DEVICE

Ray Miller; Ann Miller, both P.O. Box 57, Silver Bow, Mont. 59750; Hans Haumberger, Sr., and Hans Haumberger, Jr., both of Butte, Mont., assignors to Ray Miller and Ann Miller, both of Silver Bow, Mont.

Filed Feb. 19, 1980, Ser. No. 122,680

Int. Cl.³ B62D *53/08;* **B60R** *21/00*

U.S. Cl. 280—432 **7 Claims**



1. An anti-jackknifing control device for a tractor-trailer and the like having a fifth wheel for coupling said tractor to said trailer and a source of compressed air comprising, in combination, at least one cylinder-piston assembly mounted on said fifth wheel, means for communicating said cylinder-piston assembly to said source of compressed air for vertical movement of said piston between an extended position and a retracted position, a bottom plate on said trailer disposed in overlying relationship with said at least one cylinder-piston assembly, said bottom plate having an arcuate slot for accommodating said piston in said extended position, said arcuate slot having ends defined by portions of said bottom plate abuttingly engageable by said piston in said extended position to limit the relative-to-turning movement of said tractor and said trailer to a predetermined angle in either direction from a centerline corresponding to a longitudinally aligned position of said tractor with said trailer, and means on said fifth wheel for sensing a turning movement of said tractor relative to said trailer to an angle intermediate said centerline and said predetermined angle and alarm means in said trailer actuated by said sensing means when said intermediate angle is sensed to indicate to the operator the need for a steering correction to avoid jackknifing of said tractor-trailer wherein said sensing means comprise a pair of switches mounted on said fifth wheel each of said pair of switches being associated with a respective one of said arcuate slots, means for connecting said pair of switches to said alarm means, each of said pair of switches being arranged for engagement by said bottom plate portion defining one of said ends of the respective arcuate slot at said intermediate angle between said tractor and said trailer for actuating said alarm means, one of said pair of switches being arranged to actuate said alarm means in one direction of turning of said tractor and the other of said pair of switches being arranged to actuate said alarm means in the opposite direction of turning of said tractor.

4,341,396

FRONT AXLE ASSEMBLY FOR AUTOMOBILE

M. Georges Decouzon, Guyancourt, and M. Jean J. Carduner, Sannois, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Nov. 14, 1979, Ser. No. 94,094

Claims priority, application France, Nov. 14, 1978, 78 32071

Int. Cl.³ B60G *3/06*

U.S. Cl. 280—666 **4 Claims**

1. In an automobile having a wheel, including a vertical median plane, an axle, a steering rod and a body, a front axle assembly comprising:

an axle rack in which said axle is positioned, said axle rack including an upper extension and a lower extension, said

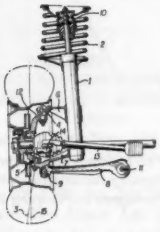
upper and lower extensions extending away from said median plane, said steering rod being articulated to said lower extension;

a transverse arm articulated to said body about a horizontal axis extending parallel to the length of said body;

a telescoping strut disposed between said axle rack and said body;

an upper leg rigidly fixed at one end to said strut and articulated at the other end to said upper extension of said axle rack via a first swivel joint having a first swivel axis; and

a lower leg rigidly fixed at one end to said strut, articulated at said other end to said lower extension of said axle rack, via a second swivel joint having a second swivel axis



substantially coaxial with said first swivel axis, and articulated at a midpoint thereof about a horizontal axis to said transverse arm, whereby said axle rack may be displaced relative to said transverse arm wherein said wheel is supported on said axle, and a line passing through the point of articulation of said upper extension and said upper leg and passing through the point of articulation of said lower extension and said lower leg, meets the ground on the side of said vertical median plane of the wheel which is opposite the side on which said assembly is located, whereby a negative offset is provided for said assembly;

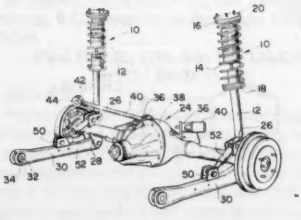
whereby a self-stabilizing effect during asymmetrical braking is achieved and road friction during turning is reduced.

4,341,397

STABILIZING DEVICE FOR A SUSPENSION OF AN AUTOMOTIVE VEHICLE

Hiroaki Morimura, Yokohama, and Masanori Abe, Kawasaki, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 25, 1980, Ser. No. 124,273
Claims priority, application Japan, Feb. 24, 1979, 54-23380[U]
Int. Cl.³ B06G *1/00*
U.S. Cl. 280—688 **12 Claims**



1. A device for stabilizing the suspension system of an automotive vehicle comprising:

first shock absorbing means substantially vertically interposed between the vehicle body and the axle housing, said first shock absorbing means being compressed and expanded in response to generally vertical road shocks;

a pair of lower control arms disposed adjacent both ends of the axle housing and extending normally with respect thereto for mounting the axle housing below the vehicle body; and

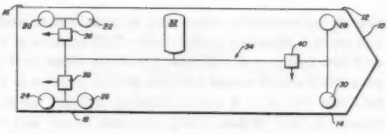
second shock absorbing means non-vertically interposed between the axle housing and said pair of lower control arms, said second shock absorbing means being compressed and expanded in response to generally non-vertical as well as vertical shocks, said second shock absorbing means having a greater absorbing and stabilizing power than said first shock absorbing means.

4,341,398

SYSTEM FOR CONTROLLING THE KNEELING OPERATION OF AIR SUSPENSION EQUIPPED TRANSIT VEHICLES

James E. Condon, Woodland, Calif.; Carl W. Roth, Barrington, and Ralph A. Gritchen, Skokie, both of Ill., assignors to Vapor Corporation, Chicago, Ill.

Filed Sep. 22, 1980, Ser. No. 189,177
Int. Cl.³ B60G *11/26*
U.S. Cl. 280—711 **1 Claim**



1. A system for controlling the kneeling operation of a transit vehicle to be added to a standard kneeling control system wherein said transit vehicle includes a frame and first and second sets of rear wheels and first and second sets of front wheels, and said standard system includes a reservoir of pressurized fluid, fluid filled suspension members mounted at each said set of said front and said rear wheels, a fluid circuit coupling each suspension member with said reservoir, first and second rear height control valves in said circuit for controlling fluid flow to and from said suspension members mounted at said first and second sets of rear wheels, respectively; a front height control valve in said fluid circuit for controlling fluid flow to said suspension members mounted at said first and second sets of front wheels; said added on system comprising first and second solenoid controlled air valves in said fluid circuit at said first and second sets of front wheels; first and second solenoid controlled air valves in said fluid circuit at said first and second sets of rear wheels for controlling flow to said suspension members, third and fourth solenoid controlled air valves in said fluid circuit at said first and second sets of front wheels, first and second exhaust control valves coupled to said third and fourth solenoid controlled valves, a by-pass valve in said fluid circuit for by-passing fluid around said front height control valve, and kneel sensing switch means for controlling the actuation of said by-pass valve.

4,341,399

PASSIVE SEAT BELT SYSTEM

Rudy V. Thomas, Sterling Heights, Mich., assignor to Allied Corporation, Morris Township, Morris County, N.J.

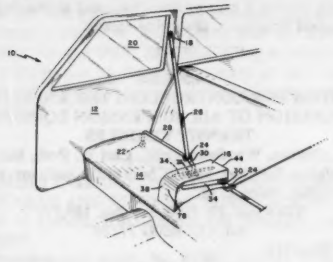
Filed Jan. 16, 1980, Ser. No. 112,668
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—802 **22 Claims**

1. A vehicle passive seat belt system comprising:

a seat belt adapted to be automatically placed in a restraining position about an occupant seated in a seat in said vehicle adjacent to a vehicle door, said seat belt extending at least across the upper torso of said occupant;

said seat belt being anchored to said vehicle by at least one first mounting point located at a position adjacent said seat inboard of said door and by at least one second mounting point located adjacent to the outboard side of said seat;

at least one of said first and second mounting points comprising winder means, said winder means comprising a rotatable storage means which is in communication with said seat belt, said storage means being rotatable in response to movement of said seat belt; and



means to automatically move said at least one of said first and second mounting points from a first position at which said seat belt is in a restraining position about said occupant when seated in said seat to a second position at which said seat belt is in a non-restraining position about said occupant, said means being non-motorized and being actuated in response to a force applied on said seat belt resulting in rotation of said storage means.

4,341,400

SKI REST FOR A SKI POLE

Leonard M. Morgan, Rte. 1, Box A136, Kansasville, Wis. 53139

Filed Nov. 26, 1979, Ser. No. 97,881

Int. Cl.³ A63C *11/22*

U.S. Cl. 280—819 **6 Claims**

1. A ski pole having a ski rest for use by a skier while travelling on a ski chair lift comprising, an arm movably mounted on the ski pole intermediate the ends thereof for movement between a retracted position substantially parallel to the pole and an extended position extending generally normal to the pole for engagement with a lift chair whereby a skier may place his attached skis on the basket of the ski pole for support thereof during travel and the supported weight is transferred to the lift chair, said arm having an opening adjacent an end thereof for loosely receiving said ski pole and of a size to permit movement of the arm between said two positions, and two edges of said opening engaging opposite sides of the ski pole when the arm is in said extended position to prevent movement of said arm beyond said extended position.

4,341,401

METHOD AND APPARATUS FOR COVERING BOOKS

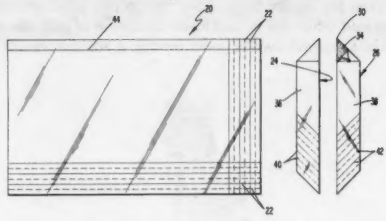
Huguette C. Arntzen, 1 Av. Franklin Roosevelt, 1050 Brussels, Belgium

Continuation-in-part of Ser. No. 730,732, Oct. 8, 1976, abandoned. This application Feb. 11, 1980, Ser. No. 120,221

Claims priority, application Belgium, Oct. 9, 1975, 834335

Int. Cl.³ B42C *15/00*; B42D *3/00*

U.S. Cl. 281—34 **25 Claims**



1. A method for covering a book comprising the steps of:

conforming a generally rectangular wrapper to the height of the book, said wrapper enveloping the book so as to leave two end flaps;

folding the end flaps over the front and rear cover, respectively, of the book;

placing a first leaflet between the front cover of the book and the first page thereof, said leaflet having a height exceeding that of the book and a width inferior to that of the book;

positioning the leaflet adjacent the proximal end of the front end flap such that portions of the leaflet protrude beyond the top and bottom edges of the book cover;

bending the protruding portions of the leaflet over the top and bottom edges, respectively, of the book cover and adhering said bent portions to the outer surface of said wrapper so as to form a loop on the inside of the book cover;

tucking said front end flap under said loop; and

repeating the above steps with respect to a second leaflet to be affixed to the rear cover of the book.

4,341,402

SYSTEMS EMPLOYING INDOLE COLOR FORMERS

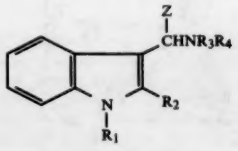
Paul J. Schmidt, Sharonville, and William M. W. Hung, Cincinnati, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Filed Mar. 6, 1980, Ser. No. 127,650

Int. Cl.³ B41M *5/16, 5/18, 5/22*

U.S. Cl. 282—27.5 **3 Claims**

1. A pressure-sensitive carbonless duplicating system or thermal marking system containing a support sheet coated with a color-forming substance comprising a compound having the formula



wherein:

R_1 is hydrogen or lower-alkyl;

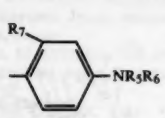
R_2 is hydrogen, lower-alkyl or phenyl;

R_3 is hydrogen or lower-alkyl;

R_4 is hydrogen, lower-alkyl, benzyl, di-lower-alkyl-amino-lower-alkyl, tri-lower-alkylammonium-lower-alkyl,

phenyl phenyl substituted with 1 or 2 halo, lower-alkyl or lower-alkoxy groups, or NR_3R_4 is pyrrolidino, piperidino, hexamethyleneimino or morpholino; and

Z is biphenylyl, naphthyl or a substituent having the formula



wherein

R_5 and R_6 are independently lower-alkyl or benzyl, and

R_7 is hydrogen, lower-alkyl, lower-alkoxy, halo or di-lower-alkylamino.

4,341,403

FLUORAN COMPOUNDS, PROCESS FOR PREPARATION THEREOF, AND RECORDING SHEETS USING SAME

Akira Igarashi, Fujinomiya; Kozo Sato, and Ken Iwakura, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

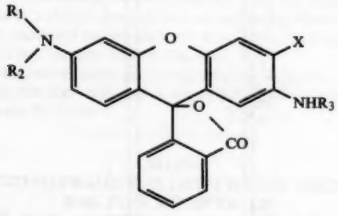
Filed Apr. 18, 1980, Ser. No. 141,527

Claims priority, application Japan, Apr. 24, 1979, 54-51270; Jan. 31, 1980, 55-10467

Int. Cl.³ B41M *5/18, 5/22*

U.S. Cl. 282—27.5 **4 Claims**

1. A pressure-sensitive recording sheet comprising a support carrying as a color former microcapsules containing a fluoran compound represented by the formula (I)



(I)

wherein R_1 and R_2 each represents an alkyl group containing up to 18 carbon atoms, R_3 represents an unsubstituted alkyl group, a halogenated alkyl group, or an alkoxyalkyl group containing up to 18 carbon atoms, and X represents a halogen atom.

4,341,404

SECURITY DOCUMENT USING A VARIABLE DOT SCREEN

William H. Mowry, Jr., Ionia, N.Y., and Kathleen M. Gerew, Spartanburg, S.C., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 11, 1980, Ser. No. 120,624

Int. Cl.³ B42D *15/00*

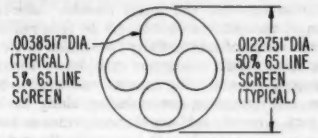
U.S. Cl. 283—8 B **14 Claims**

1. An improved security document comprising:

a substrate having a top surface for carrying indicia;

background printed matter on said top surface, said background printed matter made up of a pattern of background elements of substantially the same size and of a uniform frequency, said background elements not resolvable by a color copier; and,

a cancellation term also printed on said top surface of said substrate, said cancellation term composed of a pattern of cancellation term elements, said cancellation term elements being resolvable by a color copier to show a visually preceptible cancellation term, each said cancellation term element being a geometrically shaped printed dot,



each of said cancellation term elements having at least one unprinted area within said cancellation term element.

4,341,405

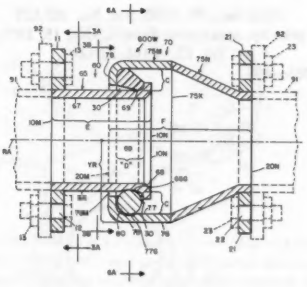
PRONOUNCED FLEXURE COUPLING DEVICES FOR ELONGATE IRRIGATION PIPES

Theodore V. Olson, R.R. #4, Atkinson, Nebr. 68713

Continuation-in-part of Ser. No. 32,559, Apr. 23, 1979, abandoned. This application May 2, 1980, Ser. No. 146,039

Int. Cl.³ F16L *27/10*

U.S. Cl. 285—5 **12 Claims**



1. In combination with consecutively neighboring pipe segments of a longitudinally extending overland traveling sprinkler irrigation apparatus, a coupling device terminally provided with upright first-flange and second-flange for removably coupling consecutive longitudinally extending elongate pipe segments of said irrigation apparatus, said coupling device comprising an insert member, an outer casing member, and an annular elastic connector permitting pronounced relative flexure between the insert and casing members according to angular and torsional articulations of the apparatus environment pipe segments:

A. said insert member comprising an insert-tube concentrically surrounding longitudinally extending reference-axis and having at the second-end thereof an upright tube-rim extending radially outwardly from the insert-tube and surrounding the reference-axis, said insert member adjacent the first-end thereof carrying an upright first-flange extending radially outwardly from the insert-tube and surrounding the reference-axis at a radius exceeding that for the tube-rim, the insert member having a longitudinally extending finite insert-length between its said first and second upright ends;

B. said casing member comprising a yoke, a casing-rim, and a casing-flange, the casing yoke, surrounding said tube-rim and being radially outwardly spaced therefrom, the casing member at its second-end carrying an upright casing-flange extending radially outwardly from the yoke and functioning as said second-flange, the casing member adjacent its first-end having said casing-rim extending radially inwardly from the yoke so as to surround and be radially outwardly spaced from the insert member tube-

rim, said casing-rim at its root delineation with the yoke being radially spaced a finite root-radius from the insert-tube, said root delineation being longitudinally spaced a finite root-length from the tube-rim and being in longitudinal position between the insert member tube-rim and first-flange, the ratio of root-length to root-radius being within the range of substantially two-thirds to two;

C. said annular elastic connector completely surrounding the reference-axis and being annularly adhered to both the tube-rim and the casing-rim including along the annular casing root, whereby said annular connector in longitudinal cross-section extends both longitudinally and radially between the insert and casing members and having a convergent configuration from the casing-rim to the tube-rim; and

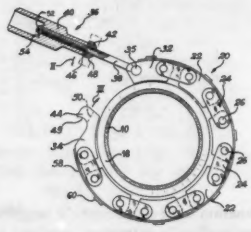
D. abrading prevention means to prevent the casing and insert members from making abrasive physical contact during exagerated articulations of the flanking elongate pipe segments environment.

4,341,406

PIPE COUPLING COMPRISING A CHAIN COLLAR

Claude Abbes, Saint Etienne; Raymond de Villepoix, Donzere, and Christian Rouaud, Bourg Saint Andeol, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 30, 1980, Ser. No. 205,519
Claims priority, application France, Oct. 15, 1979, 79 25563
Int. Cl.³ F16L *23/00*
U.S. Cl. 285—408 **4 Claims**



1. A coupling comprising two tubular end fittings adapted to be sealingly fixed to two parts of a circuit to be connected, a collar for clamping the end fittings together, a plurality of articulated elements, connecting pieces joining said articulated elements, tensioning means for connecting end elements of said collar closing said collar and to move said end fittings one towards the other, said elements cooperating with said end fittings to bring said end fittings into tightly sealed contact when said tensioning means moves said end elements one towards the other, at least one C-shaped spring for said collar connected to each of said articulated elements providing said collar with a semi-rigid structure, and means for providing a clearance in a logitudinal direction between said spring and each of said articulated elements to allow relative movement between said spring and each of said articulated elements whereby the clearance prevents transmission of tightening forces to said spring.

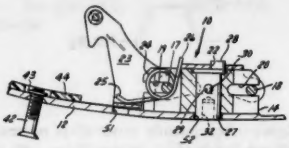
4,341,407

ADJUSTABLE RETENTION LATCH ASSEMBLY

Frank A. Zankich, San Pedro, Calif., assignor to Rexnord Inc., Milwaukee, Mich.

Filed May 9, 1980, Ser. No. 148,110
Int. Cl.³ E05C *5/00*
U.S. Cl. 292—111 **8 Claims**

1. An adjustable retention latch assembly comprising: a striker, a hook releasably engagable with said striker, a bracket onto which said hook is mounted, a slide mounted on said bracket and connected to said hook, adjustment means for moving said slide toward or away from said striker, said adjustment means including a cylindrical member engaged with said slide for moving said slide in response to rotation of said cylindrical member, and retention means for preventing unintentional rotation of said cylindrical member, said slide including



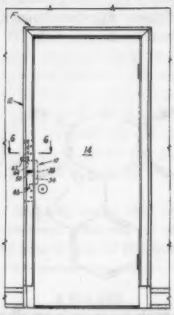
a base, legs depending from said base and attached to said hook, said base having a slot therein, and said cylindrical member including an eccentric extended portion passing through said slot, said cylindrical member having a receptacle therein for rotation thereof upon insertion and rotation of a tool.

4,341,408

TAMPERPROOF DEAD BOLT DEVICE

Paul Blevins, Rte. #3, Box 139, Bluefield, Va. 24605

Filed Mar. 18, 1980, Ser. No. 131,454
Int. Cl.³ E05C *1/04*; E05B *63/00*
U.S. Cl. 292—150 **1 Claim**



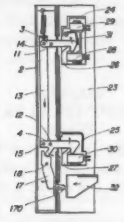
1. A dead bolt device comprising; a door frame mounted supporting plate assembly having means to secure said assembly on a door frame, said supporting plate assembly including a first plate and a second plate, said first plate having at least one channel means, a slidable member in at least one channel means where said slidable member is movable from an unlocked position to a locked position, and a locking means to lock said slidable member in the unlocked position or the locked position, said means to secure the supporting plate includes a first means extending from said supporting plate assembly through a door frame, and fastening means which fasten to said first means, said first means being threaded bolts and said fastening means are threaded nuts, a backing plate means having apertures to receive said threaded bolts aligned with said dead bolt device on the opposite side of the door frame before the threaded nuts are applied, said at least one channel means includes an abutment means, and said slidable member includes a projection to engage said abutment means, said first plate includes a second channel means in which said locking means is vertically slidable, said locking means includes a projection on said locking plate and a mating notch on said slidable bolt plate for locking said slidable bolt plate in an unlocked position, said locking means including a notched area for engaging the back edge of said slidable bolt plate, locking it in a locked position, said slidable bolt plate having a protrud-

ing operating handle and said locking means having a protruding hand grip.

4,341,409
DOOR LATCHING ASSEMBLY

Yasuhiro Sakoda, Wakayama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 10, 1979, Ser. No. 101,522
Claims priority, application Japan, Dec. 11, 1978, 53-153515; Feb. 28, 1979, 54-24877
Int. Cl.³ E05C *3/34*
U.S. Cl. 292—254 **4 Claims**

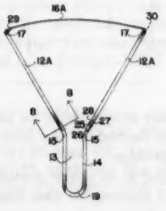


1. A microwave oven comprising
an oven housing
a door attached to the housing which can be operated between a closed and an opened position to provide access to the interior of said housing
a door latching assembly for securing the door in a closed position; said door latching assembly containing a locking element movably mounted on the door for locking the door in a closed position, and an unlocking element movably mounted on the door so as to shift the locking element and thereby unlock the door, and
actuating means mounted in said oven housing, and operable when the door is locked to move the unlocking element to unlock the door.

4,341,410
SUPPORTING FRAME FOR DETACHABLY HOLDING A BAG TYPE RECEPTACLE

Harley R. W. Summach, P.O. Box 29, Asquith, Saskatchewan, Canada (S0K 0J0)

Filed May 8, 1980, Ser. No. 147,837
Int. Cl.³ A01K *29/00*
U.S. Cl. 294—1 B **4 Claims**

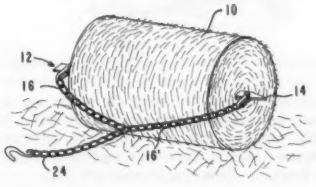


1. A holder for plastic, cloth or paper bags comprising in combination a handle portion, a pair of legs extending therefrom in spaced apart relationship and a relatively taut bracing member spanning the distal ends of said legs, said handle portion including an open portion adjacent the junction of the legs to the handle portion and extending into the handle portion whereby the area between the pair of legs opens into the said open portion adjacent said junction of the legs to said handle portion for anchoring and tensioning the associated bag with the forefinger of the hand holding the handle portion thereby maintaining the bag in the open position, the upper wall of the bag being folded over the bracing member and the legs and being detachably held thereby, said handle portion comprises a curved portion having a closed end portion and a pair of side portions extending from the closed end portion and defining said open portion, said legs being pivotally attached by one end thereof one each to each one of said side portions and movable from a folded, stored position to an extended position and vice versa, and means to pivotally connect each of said legs to one of said side portions, said means including a U-shaped clip, said side portion being pivotally secured within said U-shaped clip adjacent one end of said clip, said legs being pivotally secured within said U-shaped clip adjacent the other end of said clip, said bracing member being detachably secured to the distal end of said legs.

4,341,411
HAY BALE MOVER

Welby C. Edwards, P.O. Box 1357, Tyler, Tex. 75710

Filed Aug. 25, 1980, Ser. No. 180,575
Int. Cl.³ A01D *87/12*; B66C *1/16*
U.S. Cl. 294—74 **9 Claims**



1. A device for coupling a cylindrical hay bale to a hitch on a vehicle for moving said bale in a horizontal direction by skidding along the ground without substantial rotation thereof comprising:
a flat spring steel bar forming a point at one end, said bar having upper and lower faces lying in parallel planes, each face having a length of at least 72 inches and a width of from about 1½ to 2½ inches, said bar forming an aperture therethrough adjacent each end thereof and extending through said faces;
connecting means adapted to be coupled to each end of said bar at the apertures for connecting said bar to a hitch on a vehicle and for distributing a force therefrom equally to each end of said bar;
coupling means for coupling said connecting means to either end of said bar, said coupling means adapted to releasably secure said connecting means at the aperture adjacent the pointed end so that after the bar has been thrust axially through a bale said connecting means may be coupled to both ends thereof and said vehicle may cause said bale to skid along the ground in a horizontal direction without substantial rotation thereof.

4,341,412
TRUCK BED LINER

Michael Wayne, 1511 Ashover, Bloomfield Hills, Mich. 48013

Filed Apr. 24, 1980, Ser. No. 143,075
Int. Cl.³ B62D *33/00*
U.S. Cl. 296—39 R **7 Claims**

1. A protective liner for a truck bed structure having a floor, a front wall, and opposed side walls, the truck side walls and floor forming a rearward access opening, said liner comprising:
a molded plastic one-piece liner member adapted to be inserted in the truck bed, said liner member having a bottom wall, a front wall, and opposed side walls;

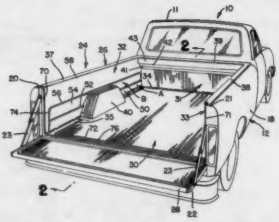
longitudinally extending bend portions connecting each said liner side wall with said liner bottom wall;

each said liner side wall being in simulated shingle form including a plurality of longitudinally extending substantially continuous stepped panels,

each panel including an upwardly and inwardly inclined riser portion and an angularly disposed tread portion extending outwardly from the upper terminus of its associated riser portion, the juncture of each panel riser and tread portion defining a longitudinally extending substantially continuous side rail;

said liner side walls characterized in that the stepped panels providing strength to resist longitudinal bending stresses while the longitudinally extending panel side rails being operative to absorb cargo impact and frictional forces;

said liner side walls and bottom wall defining a rearward substantially rectangular opening providing access for receiving material to be transported;



said liner bottom wall being in ribbed form, including a plurality of longitudinally extending adjacent inverted U-shaped ribs, said ribs extending rearwardly to a bottom wall border portion free of said ribs;

said stepped panels extending rearwardly to side wall border portions free of said stepped panels;

each side wall lowermost riser portion having its lower terminus integral with its associated longitudinally extending bend portion;

said longitudinally extending bend portions having a predetermined radius of curvature;

said liner side wall border portions joined to said bottom wall border portion by fillet portions having a predetermined radius of curvature substantially less than said bend portions radius of curvature, whereby said border fillet portions closely conform with their associated truck bed access opening corners obviating the entrance of foreign matter between the liner and the truck bed.

4,341,413

VEHICLE BODY

Kenneth P. R. Woods, Southwick, England, assignor to Coachwork Conversions Limited, Colne, England

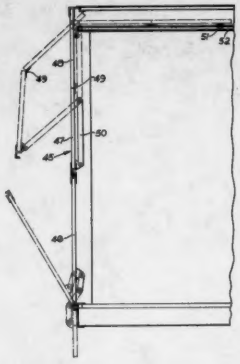
Filed May 9, 1979, Ser. No. 37,445

Claims priority, application United Kingdom, May 30, 1978, 24625/78

Int. Cl.³ B62D *25/00*

U.S. Cl. 296—50 **2 Claims**

1. A vehicle body structure including a wall having an opening therein and door means for closing the opening and being movable to an open disposition relative thereto, the door means comprising: a lower door occupying a lower portion of the opening, substantially horizontal hinge means extending along the lower edge of the lower door and mounting the lower door relative to the wall and including a substantially horizontal lower shaft rotatable with the lower door, a lower wheel mounted on the lower shaft, an upper door occupying an upper portion of the opening and serving together with the lower door for the closure of the entirety of the opening, an arm mounting the upper door to the body structure, an upper shaft carrying the arm and adapted upon rotation for swinging the arm outwardly and upwardly relative to the body structure for opening the upper door in an upward movement and carrying the door to an inoperative position within the body structure, an upper wheel mounted on the upper shaft, flexible coupling means extending in a figure 8 configuration around the upper and lower wheels in a wheel coupling relationship whereby movement of either one of the doors in opening direction imposes a corresponding simultaneous opening



movement on the other of the doors and movement of either one of the doors in closing direction imposes a corresponding simultaneous closing movement of the other of the doors, the upper door including a plurality of hinged portions with an end one of the hinged portions being provided with a guide member constrained to run along a respective guide track during the opening and closing movement.

4,341,414

BACK DOOR STAY ARRANGEMENT

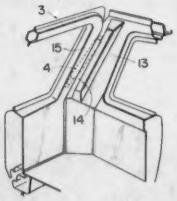
Tatsuya Chiba, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Oct. 9, 1979, Ser. No. 82,931

Claims priority, application Japan, Oct. 11, 1978, 53-139510[U]

Int. Cl.³ B62D *25/10*

U.S. Cl. 296—56 **9 Claims**



1. A back door stay arrangement for an automotive vehicle having, an opening formed at the back of the automotive vehicle body, comprising:

a back door hinged at its upper portion to the upper edge portion of said opening so that said back door can be opened or closed;

a back door stay fitted between a side edge portion of said opening and said back door for the purpose of supporting said back door;

a weather strip adapted to seal the periphery of said opening with the periphery of said back door outside said back door stay when said back door is closed;

a stepped portion formed on the inner portion of said side edge portion of said opening inside of the sealing point of said weather strip in such a way that said stepped portion

can cover one side of said back door stay, one end of said back door stay being provided on said stepped portion; and

a barrier embossed in a convex shape, the barrier being formed on the inner side of said back door at a position corresponding to said stepped portion, the other end of said back door stay being provided on said barrier;

the back door including an inner panel and an outer panel;

the vehicle body including an inner panel and an outer panel at a rear portion thereof;

the weather strip being fixed on the joint portion between the inner panel and the outer panel and resting on the seat of the inner panel of the back door when it is closed;

whereby said back door stay can be placed in a space defined by said stepped portion and said barrier when said back door is closed, so that said back door stay can be covered by said stepped portion and said barrier.

4,341,415

VEHICLE HAVING AT LEAST TWO ROWS OF TANDEM SEATS

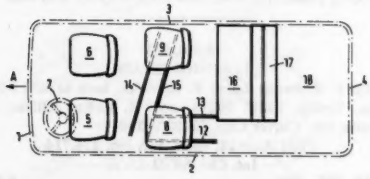
Dieter Braun, and Peter-Michael Hübner, both of Rheda-Wiedenbrück, Fed. Rep. of Germany, assignors to Westfalia-Werke Franz Knöbel & Söhne KG, Rheda-Wiedenbrück, Fed. Rep. of Germany

Filed Dec. 21, 1979, Ser. No. 105,879

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 7838370[U]

Int. Cl.³ B60N *1/08*

U.S. Cl. 296—65 R **7 Claims**



1. A vehicle having a floor comprising at least two rows of individual seats arranged one behind the other, the seats in each row being on opposite sides of the vehicle, at least two rails recessed in the floor for the second row of seats, at least one of said rails extending parallel with the longitudinal axis of the vehicle for the seat on one side of the vehicle, the other of the rails for the seat on the other side of the vehicle extending at an angle of about 60° to the longitudinal axis of the vehicle from a rearward position near one end of the longitudinally extending rails to a position in front of that end of the longitudinally extending rails, the bases of the seats of the second row having respective individual translation devices and means for swiveling each of said seats through 180°.

4,341,416

ROLL-UP TRUCK COVER ASSEMBLY

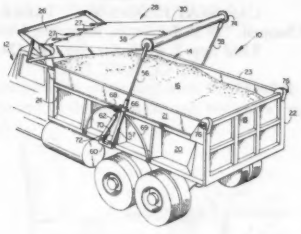
Douglas B. Richard, 113 Richard Rd., Torrington, Conn. 06790

Filed Apr. 22, 1980, Ser. No. 142,674

Int. Cl.³ B60P *7/04*

U.S. Cl. 296—98 **11 Claims**

1. A roll-up truck cover assembly for dump trucks and the like having upstanding side and end walls defining an upwardly open generally rectangular body for receiving particulate material which may project upwardly beyond the sides of said body; said cover assembly comprising a generally rectangular flexible top cover substantially co-extensive with the body cross section viewed from above, said cover having one end portion attached to one end portion of the body to close the body adjacent one end wall and prevent particulate leakage, a take-up roll for said flexible cover having an opposite end portion of the cover attached thereto substantially across its width and having associated biasing means tending to rotate the roll in a take-up operation of the cover, a pair of similar arms pivotally mounted at lower end portions externally on opposite side walls of the truck body and having upper end portions connected with and rotatably supporting opposite end portions of said take-up roll, and operating means for swinging said arms and take-up roll from said one end portion of the body toward an opposite end portion for an arcuate end-to-end take-up roll traverse of the truck body placing the cover in a body covering position, the said direction being opposite to the direction which said biasing means tend to swing said arms while urging said cover in a take-up direction about said roll,



said cover during both roll-out and take-up thus having substantially no horizontal component of movement with respect to particulate material in the truck body, and a braking apparatus associated with said take-up roll and operable at said opposite end portion of the truck body to secure the take-up roll against inadvertent rotation and to thereby hold the cover taut in its body covering position, said braking apparatus comprising circumferentially toothed rotatable means operatively associated with said take-up roll and stop means for securing the rotatable means against rotation, said stop means being mounted on said truck body at its said opposite end portion and engageable with said toothed rotatable means when said take-up roll is disposed at said opposite end portion with the cover in said body covering position.

4,341,417

ARTICLE OF FURNITURE WITH INCLINABLE BACK

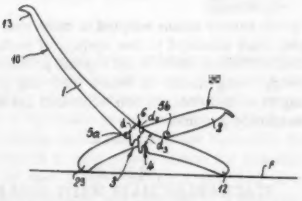
Didier Deconinck, Seyssins, France, assignor to Allibert Exploitation, Grenoble, France

Filed Jun. 10, 1980, Ser. No. 158,112

Claims priority, application France, Jun. 11, 1979, 79 15863

Int. Cl.³ A47C *4/40*

U.S. Cl. 297—24 **4 Claims**



1. A seating unit comprising:

a seat member and a back member interfitted in a generally X configuration so that a lower portion of said seat member and a lower portion of said back member form rear and front purchases for said unit on a floor, said seat member being inclined downwardly from a front thereof to its rear portion; and

means for indexing said back member relative to said seat

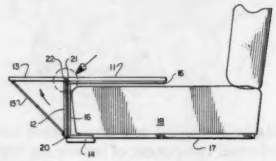
member in a plurality of selected angular positions corresponding to various inclinations of said back member while the inclination of said seat member relative to the floor is substantially constant, at least one of the sides of said back member being formed with an element extending between its lower portion and an upper portion of said back unit and formed with upper and lower edges, the corresponding side of said seat member being provided with a pair of horizontally spaced pins straddling said element, said means including a rack of notches formed along said lower edge and receiving selectively one of said pins, the other of said pins resting upon the upper edge of said element.

4,341,418

CAR SEAT HIDE-A-WAY TABLE

Austin Chappell, 739 E. 1st South, Kaysville, Utah 84037

Filed Sep. 2, 1980, Ser. No. 183,024
Int. Cl.³ A47C *7/62*
U.S. Cl. 297—192 **7 Claims**



1. A foldable car seat table assembly capable of being stored under the seat of a car when not in use comprising:

(a) a track mountable under a car seat,

(b) a three sectioned table unit, each section of which is foldable at right angles to an adjacent section and is attached to an adjacent section by hinge means, with each section being in the same plane when unfolded comprising:

(1) a tray section

(2) an intermediate section divided into a cup portion having apertures therein and a riser portion and

(3) a support end section said tray section and cup portion being connected to said riser portion at the same end thereof by separate hinge means such that when said tray section and cup portion are rotated about said hinge means to be at 90° angles from said riser they will project in opposite directions and be aligned in substantially the same plane, said support end section being connected to the opposite end of said riser portion by hinge means such that when said tray and support sections are folded at right angles to said riser they will extend in the same direction from said riser in a parallel relationship;

(c) guide runner means adapted to mate with and slide along said track attached to one surface of each section of said multisectioned table, in an aligned position, and

(d) supporting means to retain said cup portion at right angles to said riser portion when said car seat table is in as assembled position.

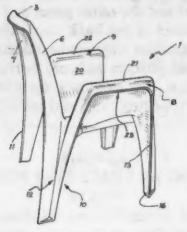
4,341,419

STACKABLE CHAIR WITH ARM RESTS

Harry Sebel, 96 Canterbury Rd., Bankstown, New South Wales 2200, Australia

Continuation-in-part of Ser. No. 970,328, Dec. 18, 1978, abandoned. This application Aug. 19, 1980, Ser. No. 179,456
Claims priority, application Australia, Dec. 19, 1977, PD2817
Int. Cl.³ A47C *3/04*
U.S. Cl. 297—239 **11 Claims**

1. A stackable armchair moulded in a single piece from plastics material, said armchair comprising a seat, a back, front legs, rear legs, and a left arm rest and right arm rest respectively positioned at the corresponding sides of said seat, each of said legs having an outwardly directed channel therein extending along substantially the length thereof and defining rearward and forward edge portions for each of said legs, the forward edge portion of each of said rear legs and the rearward edge portion of each of said forward legs extending upwardly beyond said seat at opposite sides of said seat to form rearward and forward portions of the corresponding arm rest, each arm



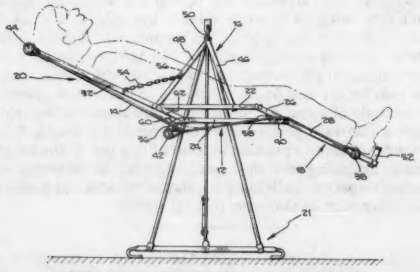
rest having a downwardly opening substantially U-shaped trough extending between said upwardly extending leg portions and forming the top of the arm rest, one armrest and corresponding trough being slightly narrower than the other arm rest and corresponding trough so that the narrower arm rest of one chair will fit in the wider arm rest of an adjacent chair, said rearward edge portions of said rear legs being extended upwardly to form the sides of said back, and said arm rests being connected with said back only by said seat.

4,341,420

LOUNGE CHAIR

William F. Knowles; Larry F. Knowles, both of 835 Milwood Ave., Venice, Calif. 90291, and H. LeRoy Oliver, 10735 Cranks Rd., Culver City, Calif. 90230

Filed Aug. 11, 1980, Ser. No. 176,714
Int. Cl.³ A47D *13/10*
U.S. Cl. 297—280 **5 Claims**



1. An articulated frame hanging chair comprising:

an articulated frame including elongated elements pivotally connected to define a pair of spaced-apart articulated parallelogram members, each said parallelogram member including a pair of normally horizontally extending seat elements spaced apart from one another in a generally parallel relationship, and a pair of end elements spaced apart from one another in a generally parallel relationship, said seat elements and end elements being pivotally connected to form said parallelogram member, a first one of said end elements being extended outwardly beyond said parallelogram member in a first direction to define a leg portion of said articulated frame, a second one of said end

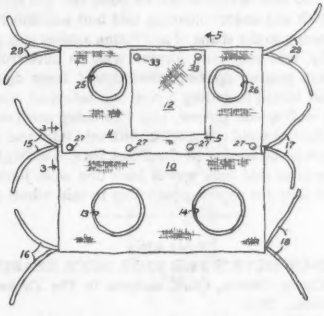
elements being extended outwardly beyond said parallelogram member in a second direction to define a back portion of said articulated frame, a plurality of laterally extending spacer elements extending between said parallelogram members, a pair of support elements extending normally upwardly from the normally upper one of said seat elements to define therewith a triangular structure, a first one of said support elements pivotally connected at one end to the pivotal connection between said second one of said end elements and said normally upper one of said seat elements, means at the normally uppermost apex of said triangular structure for swingably connecting said chair to a support, adjustable articulation limiting means extending between said first one of said support elements and said back portion to adjustably limit the articulation of said articulation frame, and shield means for preventing injury positioned at the exposed apexes of said parallelogram members where the said elongated members normally articulate through an angle of less than ninety degrees.

4,341,421

CHILD RESTRAINING ARTICLE

Kathryn E. Rowley, Rockledge, Pa., assignor to Barbara J. Braun, Rockledge, Pa.

Filed Jul. 7, 1980, Ser. No. 166,136
Int. Cl.³ A47D *13/08*
U.S. Cl. 297—465 **1 Claim**



1. A composite child restraining assembly which comprises three attached but separable sheets, namely:

an elongated lower sheet which has along its length two spaced holes in it to receive a child's legs close to its body and has attached to it at each of its four corners tapes to be used to tie the lower sheet to a chair frame,

an elongated chest sheet having two arm holes in it along its length and also tapes at its two top edge corners to tie to a chair frame,

a separable attachment between the lower sheet and the chest sheet along their meeting edges,

a waterproof bib sheet overlying the top central portion of the chest sheet between the arm holes,

and a separable attachment between the top edges of the bib sheet and the chest sheet.

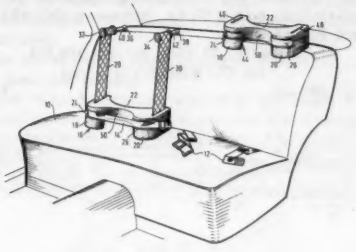
4,341,422

RESTRAINT DEVICE

Douglas J. Cunningham, Lutterworth, England, assignor to B.S.G. International Limited, Birmingham, England

Filed Jun. 9, 1980, Ser. No. 157,947
Claims priority, application United Kingdom, Jun. 9, 1979, 7920164
Int. Cl.³ B60R *21/00*; A47C *31/00*
U.S. Cl. 297—488 **7 Claims**

1. A restraint device for use with a vehicle seat comprising a pad shaped to fit over and around the thighs and abdomen of a child seated in the vehicle seat, guide means on the pad for engagement with an adult lap safety belt to hold the pad in position between a child and said safety belt, and a pair of webs



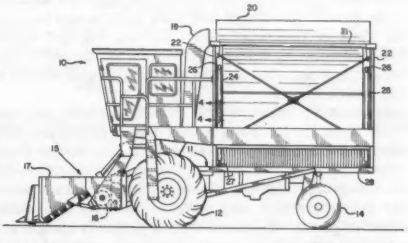
of flexible material each extending from a respective attachment point adjacent to the top of the seat back to a respective side of the pad.

4,341,423

BASKET LIFT APPARATUS

Robert M. Fachini, Naperville; Michael J. Covington, La Grange, and Jesse H. Orsborn, Clarendon Hills, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Dec. 22, 1980, Ser. No. 219,000
Int. Cl.³ B60P *1/16*
U.S. Cl. 298—18 **5 Claims**

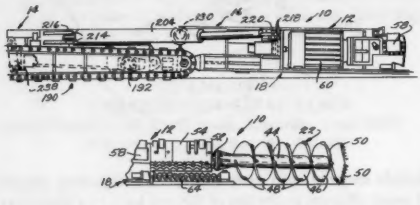


1. In a crop carrying high dump vehicle, a mobile chassis, a crop receiving receptacle mounted on said chassis in a manner permitting elevation of the bottom portion of the receptacle from said chassis, a hydraulic power means operatively associated with said vehicle, and a pair of linear hydraulic motors operatively connected to said power means for simultaneous actuation, each of said motors having a first rod pivotally connected to said receptacle and attached to a first piston, a second rod pivotally attached to said chassis and attached to a second piston, and a cylindrical housing slidably receiving said first piston in one end and said second piston in the other end, said housing being independent of said chassis and said receptacle for unrestrained movement in the axial direction relative thereto, and means interconnecting the cylindrical housings of said linear motors and disposed to limit rotation of said housings while permitting relative axial movements thereof.

4,341,424
MOBILE DUAL AUGER CONTINUOUS MINING MACHINE WITH MULTIPLE MOVEMENT CAPABILITIES

Arnold G. Wilcox, Jr., Shady Spring, and Roger D. Plumley, Crab Orchard, both of W. Va., assignors to Fairchild Incorporated, Raleigh, W. Va.

Filed Oct. 21, 1980, Ser. No. 199,363
Int. Cl.³ E21C 27/24, 35/20
U.S. Cl. 299—57 11 Claims



1. A continuous mining machine comprising:

a cutter assembly including a cutter frame, a pair of oppositely pitched auger cutters having their axes of rotation disposed generally parallel with respect to one another, means mounting each of said auger cutters on said cutter frame with the rotational axis thereof extending longitudinally forwardly for independent vertical pivotal movement about a pivotal axis parallel with its axis of rotation, means for effecting a vertical pivotal movement of each auger cutter independently about its pivotal axis with respect to said cutter frame, means carried by said cutter frame for rotating said auger cutters in opposite directions about their rotational axes in any position of vertical pivotal movement thereof,

a mobile assembly disposed rearwardly of said cutter assembly and including a pair of parallel power driven endless track units, a mobile frame, means mounting said mobile frame between said endless track units for independent pivotal movement of each unit about a common generally transversely extending horizontal axis disposed adjacent to the forward portion of said track units, means between the rearward portion of each track unit and said mobile frame for effecting independent pivotal movement of each track unit about said common pivotal axis with respect to said mobile frame,

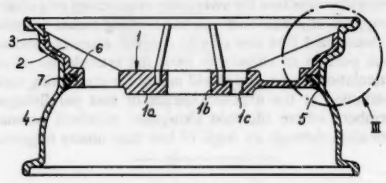
a yoke assembly between said mobile assembly and said cutter assembly including a yoke frame, means pivotally interconnecting said yoke frame with said mobile frame for pivotal movement about an axis generally parallel with the common pivotal axis of said track units, means pivotally interconnecting said yoke frame with said cutter frame for pivotal movement about a generally upright axis extending generally perpendicularly to the pivotal axis of said yoke frame with said mobile frame, means for effecting a pivotal movement of said cutter frame horizontally about its upright pivotal axis with said yoke frame, means for effecting pivotal movement of said yoke frame and said cutter frame vertically about the pivotal axis of said yoke frame with respect to said mobile frame, and

conveyor means including a forward section carried by said cutter frame and a rearward section carried by said mobile frame for conveying coal cut by said auger cutters longitudinally rearwardly of the machine, means pivotally mounting the forward portion of the rearward conveyor section on said mobile frame for pivotal movement about an axis parallel to the common pivotal axis of said track units and means between the rearward portion of said rearward conveyor section and said mobile frame for effecting pivotal movement of said rearward conveyor section about its pivotal axis with respect to said mobile frame.

4,341,425
MOTOR VEHICLE WHEEL

Rudolf Streicher, and Manfred Pöll, both of Vienna, Austria, assignors to Vereinigte Metallwerke Ranshofen-Berndorf Aktiengesellschaft, Braunau am Inn, Austria

Filed Jun. 10, 1980, Ser. No. 158,125
Claims priority, application Austria, Jun. 11, 1979, 4168/79
Int. Cl.³ B60B 1/08, 23/00
U.S. Cl. 301—64 SH 2 Claims

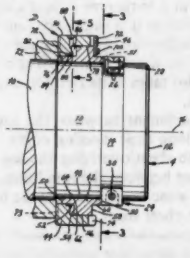


1. An aluminum wheel for a vehicle comprising a felly composed of a malleable aluminum alloy selected from the group which consists of AlMgSi1 and AlZn4.5Mg1 and provided with an inner cylindrical portion adjoining a frustoconical portion, a wheel disk composed of a cast alloy selected from the group which consists of GK(GD)-AlSi12 and GK-AlSi7Mg, said disk having a hub, an outer rim and spokes cast unitarily with and interconnecting said hub and said rim, said rim conforming to the shape of and fitting against said portions of said felly, said rim being formed with an outwardly open angle-section groove opening toward said inner cylindrical portion, and means including a ring cast into said wheel disk and fitting within said groove, said ring being composed of a material which is weld compatible with said felly and selected from the group consisting of S-AlMg4.5Mn, S-AlMg5 or the same material as said felly and at least one weld joining said ring to said felly for securing said felly to said wheel disk.

4,341,426
CLAMP-UP DEVICE FOR ROLL NECK BEARINGS

James R. Clapp, Canton, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Oct. 22, 1980, Ser. No. 199,485
Int. Cl.³ F16C 43/04
U.S. Cl. 308—187.1 12 Claims



1. A clamp-up device for installing and holding a bearing on a shaft, such as the neck of a mill roll, said clamp-up device comprising: first and second rings adapted to fit around the shaft such that the first ring is prevented from moving off of the shaft while the second ring is free to move axially toward the bearing on the shaft, one of the rings being capable of rotating relative to the other of the rings, the first and second rings each having a generally radially directed wall surface and a generally axially directed wall surface, and the radially and

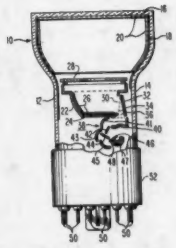
axially directed wall surfaces of the two rings together defining an annular chamber which circumscribes the shaft and is otherwise arranged such that when it is pressurized with a fluid, the second ring will be urged axially toward the bearing so as to exert an axially directed force on the bearing and thereby move the bearing to its operating position on the shaft, each of the rings on its radially directed wall surface further having a ramp which will align with the ramp on the other of the rings when the rings are in the proper angular position relative to each other, the ramps further being configured to force the second ring away from the first ring upon relative rotation of the one ring relative to the other ring in the proper direction so as to hold the bearing in the operating position to which it is forced by the pressurized fluid; a first seal element located along the axially directed wall surface of the first ring to form a barrier between that wall surface and second ring; and a second seal element located along the axially directed wall surface of the second ring to form a barrier between that wall surface and the first ring.

4,341,427

METHOD FOR STABILIZING THE ANODE SENSITIVITY OF A PHOTOMULTIPLIER TUBE

Charles M. Tomasetti, Leola; Maurice D. Harsh, and Arthur F. McDonie, both of Lancaster, all of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,675
Int. Cl.³ H01J *9/12, 9/00*
U.S. Cl. 316—1 **10 Claims**



1. A method of stabilizing the anode sensitivity of a photomultiplier tube, having a photocathode, an anode and a plurality of dynodes for propagating and concatenating electron emission from said photocathode to said anode, each of said plurality of dynodes comprising a supporting substrate having a secondary emissive material on an exposed surface thereof, and at least one Nichrome dynode adjacent to said anode, comprising the steps of:

establishing a temperature gradient across said plurality of dynodes so that the temperature of said Nichrome dynode is substantially greater than said photocathode;

bright aging said tube at a first voltage for a predetermined period of time with the photocathode illuminated; and then

dark aging said tube at a second voltage for a second predetermined period of time with said photocathode non-illuminated.

4,341,428

INTERCONNECTION SYSTEM FOR SHIELDED ELECTRICAL CABLE

David A. Hatch, Sherborn, and Paul J. White, Holliston, both of Mass., assignors to Pintek, Inc., Newton Upper Falls, Mass.

Filed Mar. 24, 1980, Ser. No. 132,821
Int. Cl.³ H01R *13/34*
U.S. Cl. 339—14 R **28 Claims**

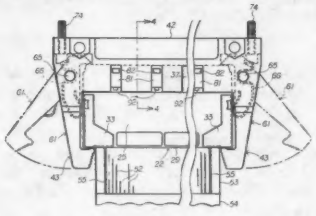
1. An electrical connector system for use with a cable having a plurality of signal wires and a conductive shield therefor, said system comprising:

a plug-in connector housing adapted to receive the shielded cable;

a plurality of connector contacts retained by said housing and each shaped and arranged for connection to one of the signal wires;

a header means shaped and arranged to receive and retain said connector housing;

a plurality of header contacts retained by said header means and each positioned so as to engage one of said connector contacts upon reception of said connector housing by said header means;



connector ground contact means disposed externally on said connector housing and adapted for connection to the conductive shield;

header ground contact means supported by said header means and shaped and arranged to engage said connector ground contact means upon reception of said connector housing by said header means; and

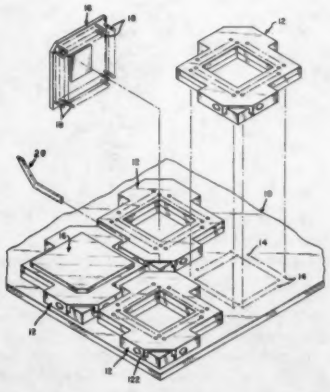
force producing means movable into a position that induces and maintains contact force between said connector ground contact means and said header ground contact means with said connector housing retained by said header means.

4,341,429

ELECTRICAL CONNECTOR

Edward J. Bright, Elizabethtown; Glenn A. Engle, Hershey, and William S. Scheingold, Palmyra, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 20, 1980, Ser. No. 198,493
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—74 R **5 Claims**



1. A connector for receiving and electrically connecting a ceramic substrate or like device having a plurality of pins

depending therefrom to a printed circuit board or the like, said connector comprising:

a. a housing of insulating material having a plurality of cavities extending thereinto from the upper surface thereof, a passage from each cavity extending to and opening out on the underside of the housing;

b. a cover of insulating material slidably mounted on the upper surface of the housing and having a plurality of slots extending upwardly into the cover from its underside and a plurality of openings extending downwardly from the upper surface of the cover and intersecting the slots, said slots and openings being positioned in the cover in the same pattern as the cavities in the housing;

c. a plurality of contacts stamped and formed from conductive material and having;

i. means adapted for being electrically connected to a printed circuit board or the like,

ii. a fixed arm having a lower portion attached to and extending generally upwardly from said means and an upper portion bent in to lie generally at about a right angle to the lower portion,

iii. an elongated web attached to one edge of the lower portion of the fixed arm and extending therearound with a free end being adjacent to the opposite edge of the lower portion, and

iv. a movable arm attached to and extending upwardly from the web adjacent the free end thereof, said movable arm extending above and being generally normal to the free end of the fixed arm and adjacent thereto,

said contacts being positioned in the cavities in the housing with said means extending therebefore for attachment to a printed circuit board or the like and the movable arm extending up into the slots in the cover,

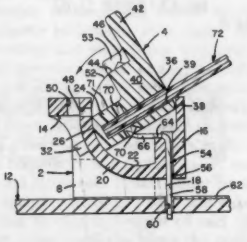
so that upon sliding the cover, the movable arms are drawn away from the fixed arms to admit therebetween the pins on a ceramic substrate or the like for electrical contact therewith.

4,341,430

FLAT CABLE CONNECTOR

Christopher L. Crawford, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 5, 1980, Ser. No. 204,099
Int. Cl.³ H01R *11/20, 13/514*
U.S. Cl. 339—99 R **5 Claims**



1. A connector for flat cable, comprising:

a base,

a holder pivoted to said base and provided with a passageway constructed to receive multiple conductors of a flat cable,

multiple electrical terminals on said base with terminal portions projecting externally of said base and conductor terminating portions projecting toward said passageway,

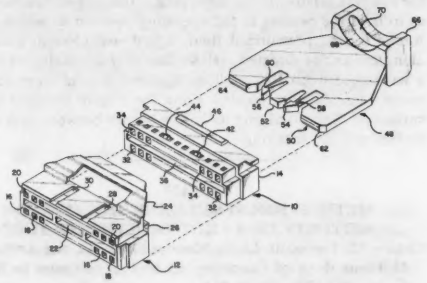
said base including an arcuate wall slidably cooperating with said holder upon pivoting said holder passageway in a curvilinear course into said terminating portions, and, said holder including a projection slidable along a slot in said arcuate wall, said projection having an enlarged head slidable along said arcuate wall.

4,341,431

STRAIN RELIEF

John A. Woratyla, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 16, 1980, Ser. No. 160,056
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—103 M **2 Claims**



1. In combination with an electrical connector having a housing with at least two parallel spaced terminal carrying portions defining at least one elongated slot between each pair of portions and at least one pair of parallel spaced pillars subdividing said slot into a plurality of passages, a strain relief member adapted to be detachably mounted on said connector, said strain relief member comprising:

a unitary member of rigid insulative material having an overall rectangular profile with a forward edge profiled to define an integral pair of legs on opposite sides of a central lug, each leg having an outwardly directed shoulder adjacent the free end and stabilizes flanges extending from said forward edge to either side of said legs and engageable in a respective one of said passages in said elongated slot of said housing;

a block formed on an opposite rear edge of said member with an outwardly directed concavity formed on each side of the block and a through slot extending between said surfaces; and

bundle tie means whereby conductors extending from said connector and lying in said concavities are encircled by said bundle tie means passing through said slot to secure them to said member.

4,341,432

LIQUID COOLED CONNECTOR FOR INTEGRATED CIRCUIT PACKAGES

John M. Cutchaw, 7333 E. Virginia Ave., Scottsdale, Ariz. 85257

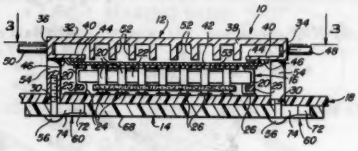
Continuation-in-part of Ser. No. 64,057, Aug. 6, 1979, Pat. No. 4,293,175, which is a continuation-in-part of Ser. No. 913,871, Jun. 8, 1978, Pat. No. 4,166,665, which is a continuation-in-part of Ser. No. 862,582, Dec. 20, 1977, Pat. No. 4,164,003, which is a continuation-in-part of Ser. No. 754,365, Dec. 27, 1976, Pat. No. 4,063,791. This application Jul. 10, 1980, Ser. No. 168,392
Int. Cl.³ H01R *13/00*
U.S. Cl. 339—112 L **15 Claims**

1. A connector for removably mounting and electrically connecting an integrated circuit package on a backpanel and dissipating the heat generated by operation of the integrated circuit package, the backpanel having holes formed therethrough, said connector comprising:

(a) a thrust/heat dissipating member of substantially planar configuration for placement in overlaying engagement with the integrated circuit package and movable toward the backpanel for exerting a force on the integrated circuit

package to pressurize the leads thereof into conductive contact with aligned terminal pads of the backpanel when the integrated circuit package is alignigly positioned thereon, said thrust/heat dissipating member having means for absorbing and dissipating the heat generated by operation of the integrated circuit package;

(b) a thrust inducing mounting plate for positioning in contiguous engagement with the opposite surface of the backpanel; and



(c) complemental elements of a demountable biased connection on said thrust/heat dissipating member and on said thrust inducing mounting plate for interconnection thereof through the holes of the backpanel to move said thrust/heat dissipating member toward the backpanel for pressurized mounting and electrical connection of the integrated circuit package on the backpanel.

4,341,433

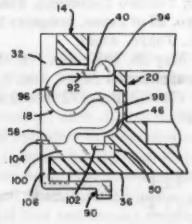
ACTIVE DEVICE SUBSTRATE CONNECTOR

Gabriel B. Cherian, York; William S. Scheingold, Palmyra, and Frank C. Youngfleish, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 38,607, May 14, 1979, abandoned, which is a continuation of Ser. No. 904,645, May 10, 1978, abandoned. This application May 8, 1980, Ser. No. 147,766

Int. Cl.³ H01R *13/22*

U.S. Cl. 339—176 MP **2 Claims**



1. A connector for electrically connecting an active device substrate to a PCB, comprising:

a. a frame of insulating material formed by four side walls arranged to define therein between a centrally located, upwardly opened compartment, and ledge extending around the perimeter of the compartment formed by upwardly facing shoulders located on the inwardly facing vertical surfaces of the side walls, said ledge providing support for a substrate which may be positioned in the compartment;

b. a plurality of narrow cells spaced along and extending into each of the side walls from the outwardly facing vertical surfaces thereof, each cell having an opening into the compartment through the upwardly facing shoulders and a forward wall extending downwardly from the opening to a floor of the cell; and

c. a plurality of spring members consisting of a horizontal bar with forward and rearward ends, a S-shaped spring section extending upwardly from the bar with a contact on the free end, a vertical arm depending from the rearward end of the bar, a horizontal arm extending forwardly from the vertical arm, and a contact on the horizontal arm, said spring members being positioned in the cells with the horizontal bar supported by the floor so that the contact on the spring section extends through the opening into the compartment for engagement with a substrate which may be positioned therein and with the horizontal arm being beneath the frame so that the contact thereon may engage a conductive trace on a PCB.

4,341,434

ELECTRIC PLUG CONTACT

Max Pfister, Hunenberg, Switzerland, assignor to CDM Connectors Development & Mfg. AG, Cham, Switzerland

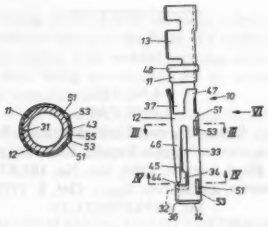
PCT No. PCT/CH79/00022, § 371 Date Oct. 15, 1979, § 102(e) Date Oct. 15, 1979, PCT Pub. No. WO79/00635, PCT Pub. Date Sep. 6, 1979

PCT Filed Feb. 12, 1979, Ser. No. 189,845

Claims priority, application Switzerland, Feb. 17, 1978, 146/78

Int. Cl.³ H01R *11/22*

U.S. Cl. 339—256 R **10 Claims**



1. An electric plug contact which includes

an elongated, electrically conductive contact body, said contact body including a cylindrical portion having at least one pair of anchoring members extending outwardly therefrom, and

an elongated spring sleeve wrapped around the cylindrical portion of the contact body, the spring sleeve having side edges which are closely positioned along a longitudinal line extending between each pair of anchoring members, the spring sleeve including pairs of perforations therein at least equal in number to the number of pairs of anchoring members on the contact body, each perforation of each pair of perforations being located near an opposing side edge of the spring sleeve so as to create a holding bridge portion between the perforation and the associated side edge, each perforation being located and shaped such that an associated anchoring member is located therein in continuously wedged relationship against the associated holding bridge portion of the spring sleeve.

4,341,435

STEREOSCOPIC MICROSCOPE FOR MULTIPLE OBSERVATION

Walter Lang, Königsbronn; Ortwin Müller, Aalen, and Alfons Neidlinger, Heidenheim, all of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Fed. Rep. of Germany

Filed Nov. 28, 1980, Ser. No. 211,129

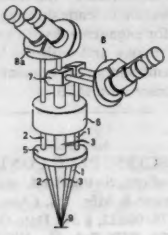
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1979, 2949428

Int. Cl.³ G02B *21/22*

U.S. Cl. 350—35 **8 Claims**

1. Stereoscopic microscope for multiple observation, comprising three observing light paths, means causing said light paths to converge on an object to be observed, said light paths having entrance pupils with centers lying at the corners of a

triangle, and means for splitting at least one of said light paths in such manner as to provide from said three light paths two



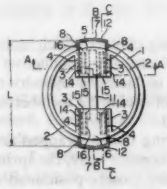
pairs of stereoscopically related observing light paths so that two observers may simultaneously observe the object stereoscopically.

4,341,436

LENS CAP

Hideo Kanno, Kawasaki, and Yoshiki Suzuki, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 28, 1980, Ser. No. 181,977
Claims priority, application Japan, Oct. 5, 1979, 54-137360
Int. Cl.[3] G02B *23/16*
U.S. Cl. 350—65 **2 Claims**



1. In a lens cap mountable on a rim formed at the end of a lens barrel, said lens cap having:

a disc-shaped cap body;

a pair of sliding members opposed to each other on said cap body and slidable diametrically of said cap body; and

a biasing member for biasing said sliding members in a direction in which they are extended outwardly from said cap body;

said sliding members having connecting portions engageable with a connecting portion provided on the inner peripheral surface of the rim of said lens barrel, said lens cap being mounted on said lens barrel by engagement between said connecting portions;

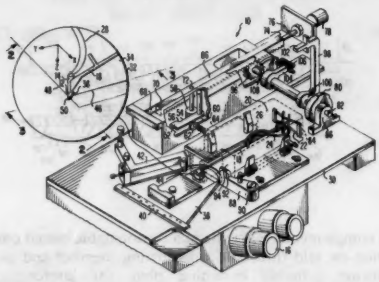
the improvement comprising engaging members provided at opposed ends of said sliding members, said engaging members limiting the outward extension of said sliding members from said cap body against said biasing means by mutual engagement therebetween, and wherein at least one of said engaging members is supported on a sliding member by a resilient member, and as said sliding members are slid against said biasing member for the assembly of said lens cap, said engaging members bear against each other and said resilient member is resiliently deformed to enable one of said engaging members to ride across and come into engagement with the other engaging member.

4,341,437

STYLUS TIP POSITIONING TECHNIQUE

John A. van Raalte, Princeton, and David W. Fairbanks, Monmouth Junction, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 30, 1980, Ser. No. 202,120
Int. Cl.[3] G02B *7/00*
U.S. Cl. 350—81 **27 Claims**



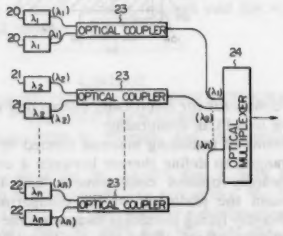
13. An apparatus for positioning the tip of a stylus mounted on an arm attached to a cartridge for viewing through a microscope, said arm being capable of flexible movement with respect to said cartridge, comprising a platform having a transparent plate attached thereto, said platform adapted to support said cartridge so that the tip of said stylus contacts a surface of said plate disposed between said tip and an objective of said microscope, said plate being prepositioned such that said surface lies in the focal plane of said microscope objective.

4,341,438

LIGHT SOURCE ARRANGEMENT IN AN OPTICAL COMMUNICATION SYSTEM

Norio Seki, Tokyo; Yohtaro Yatsuzuka, Yokohama, and Haruo Sakaguchi, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed May 28, 1980, Ser. No. 153,968
Claims priority, application Japan, Jun. 6, 1979, 54-69968
Int. Cl.[3] G02B *5/172*; H04B *9/00*
U.S. Cl. 350—96.16 **1 Claim**



1. A light source arrangement in an optical communication system comprising

(a) a plurality of pairs of light sources, each light source within each of said pairs having identical wavelengths and each pair of said light sources having a different wavelength from each other pair,

(b) a plurality of optical couplers, each of said optical couplers connected to one of said pairs of light sources for coupling together the outputs of each pair of light sources,

(c) an optical multiplexer connected between each of said optical couplers and an optical fiber cable for multiplexing

the outputs of each of said optical couplers to said optical fiber cable, and

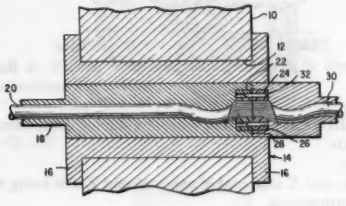
(d) an electrical switch for selectively actuating one of said light sources wherein said electrical switch is arranged to select one of said light sources when another of said light sources has failed.

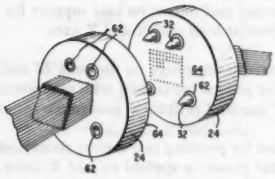
4,341,439

OPTICAL FIBER CONNECTOR AND METHOD OF MAKING SAME

Malcolm H. Hodge, Claymont, Del., assignor to TRW Inc., Elk Grove Village, Ill.

Filed Oct. 4, 1979, Ser. No. 81,946
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.22 **27 Claims**





11. A connector for effecting optical connections between adjacent ends of optical fibers, the combination comprising discrete first and second housings; optical fibers to be joined disposed in said housings, each of said housings comprising a plurality of parallel cylinders in tangential engagement defining fiber-receiving channels having cusp-shaped interstices; the axes of said cylinders being bent intermediate the ends thereof whereby said optical fibers inserted in first receiving ends of said channels of said first and second housings are urged into corresponding interstices of corresponding channels; said fibers terminating with the channel-defining cylinders at second connecting ends of said channels; said first and second housings being of precisely the same configuration at said second ends whereby fibers disposed in corresponding channels of said housings engage in optical signal transmissive connections when corresponding channel second ends of said first and second housings engage in a face-to-face connection.

4,341,440

UNDERSEA OPTICAL FIBER TELECOMMUNICATIONS CABLE

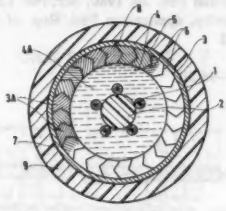
Jean-Pierre Trezeguet; Jean-Patrick Vives, both of Calais, and Georges Comte, Lyons, all of France, assignors to Societe Anonyme dite: Les Cables de Lyon, Lyons, France

Filed Dec. 11, 1979, Ser. No. 102,465
Claims priority, application France, Dec. 12, 1978, 78 34890
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.23 **6 Claims**

1. An undersea optical fibre telecommunications cable, comprising:

at least one optical fibre immersed in a liquid whose viscosity is close to that of glycerine;

said optical fibre containing liquid being housed in a casing formed by a stranded assembly of metal wires of generally polygonal cross-section having radially inwardly directed sides of polygonal sections shorter than the radially outwardly directed sides and the intermediate sides being in contact with those of neighbouring wires to form a rigid arch structure;



said casing being covered with an outer tube of an electrically conductive metal in the form of a skelped metal tape around the casing with welded meeting edges;

said outer tube being surrounded by an outer sheath of polymeric material; and

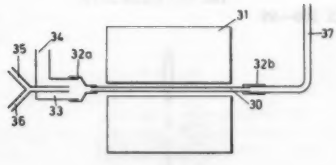
the density of the optical fibre containing liquid being close to that of water so that the overall density of the cable is slightly higher than that of water.

4,341,441

METHOD OF MAKING SOLID PREFORMS AND OPTICAL FIBERS DRAWN THEREFROM

Paul E. Lighty, Lafayette, N.J.; Philip W. Black, Mountfitchet, and John Irven, Bishop Stortford, both of England, assignors to International Standard Electric Corp., New York, N.Y.

Continuation of Ser. No. 497,990, Aug. 16, 1974, abandoned.
This application Jan. 24, 1977, Ser. No. 761,746
Claims priority, application United Kingdom, Aug. 21, 1973, 39444/73
Int. Cl.³ C03B 37/025, 37/075
U.S. Cl. 350—96.30 **11 Claims**



1. A method of making an optical fiber preform suitable for drawing into an optical fiber including the steps of:

providing a hollow glass tube of a first refractive index and having a predetermined length with a bore formed therethrough;

introducing into said bore, in unreacted dry vapor form, material that forms a glass layer,

coating said bore by thermally depositing said material thereon to form a glass layer of higher refractive index than the refractive index of said tube;

rotating said glass tube about its longitudinal axis by a rotating device; and

heating said coated tube to collapse said tube into a solid preform having substantially the same length as said predetermined layer whereby the glass coating layer becomes a core of said higher index of refraction than the refractive index of said tube.

6. An optical fiber drawn from an optical fiber preform made by the method of claim 1.

4,341,442

FIBER OPTICAL TRANSMISSION FILTER WITH DOUBLE-REFRACTION ELEMENT

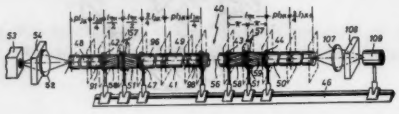
Mark Johnson, Ossining, N.Y., assignor to Max-Planck-Gesellschaft zur Forderung d. Wissenschaften e. V., Gottingen, Fed. Rep. of Germany

Filed Feb. 26, 1980, Ser. No. 124,720

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1979, 2908752

Int. Cl.³ G02B 5/172

U.S. Cl. 350—96.30 **18 Claims**



17. An optical transmission filter comprisng:

an input polarizer for receiving light along a predetermined light path;

an output polarizer; and

a single-mode optical fiber mounted between the input and output polarizers comprising:

an input linear double refraction delay section for receiving light from the input polarizer;

an output linear double refraction delay section for sending light to the output polarizer;

an intermediate linear double refraction delay section located between the input and output delay sections; and

a plurality of coupling sections for coupling the input and output delay sections to the intermediate delay section, wherein the coupling sections are twisted under a torsional force to produce an elliptical double refraction.

4,341,443

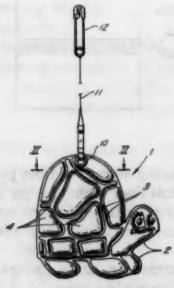
LIGHT REFLECTIVE SAFETY DEVICE

Jerrold Robinson, Scarsdale, N.Y., assignor to The Dimension Weld International Corp., Stamford, Conn.

Filed Jun. 13, 1977, Ser. No. 806,278

Int. Cl.³ G02B 5/12

U.S. Cl. 350—98 **6 Claims**



1. A light-reflective safety-device, particularly for use by children on dark roads, comprising a tag composed of a layer of padding material sandwiched between two layers of at least translucent synthetic plastic sheet material, said layers being heat-bonded to one another in a first zone extending along the circumference of the tag and in additional zones inwardly of said first zone so as to delineate a plurality of raised padded areas on said tag, said areas being convexly curved and each being circumferentially flanked by continuous planar surface portions which are inclined to the general plane of the tag so that light impinging on said convex areas is scattered and reflected; and means for attaching said tag to a user.

4,341,444

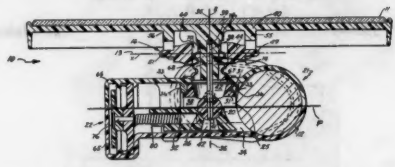
ELECTRICALLY OPERATED REMOTE CONTROL REARVIEW MIRROR

Gerard N. Stelma, Grand Rapids, Mich., assignor to Keeler Corporation, Grand Rapids, Mich.

Filed Aug. 1, 1980, Ser. No. 174,535

Int. Cl.³ G02B 7/18

U.S. Cl. 350—289 **38 Claims**



1. An electrically actuated rearview mirror comprising:

an X axis;

a Y axis;

a Z axis, said X axis, said Y axis and said Z axis being mutually orthogonal;

a mirror;

a support for said mirror;

means for mounting said mirror on said support for pivotal movement about at least said X and Y axes;

a sphere;

means for mounting said sphere on the back of said mirror for conjunctive pivotal movement with said mirror about said X and Y axes and reciprocal movement about said Z axis;

an X drive means for pivoting said mirror about said X axis when electrical power is applied to said X drive means, said X drive means including a first surface encompassing at least a portion of one-half of said sphere, said first surface slidably engaging said sphere;

a Y drive means for pivoting said mirror about said Y axis when electrical power is applied to said Y drive means, said Y drive means including a second surface encompassing at least a portion of the opposing half of said sphere, said second surface slidably engaging said sphere, said first and second surfaces extending in mutually orthogonal directions; and

said X and Y drive means including means for displacing said first and second surfaces in mutually orthogonal directions, said first and second surfaces being displaced in directions which are orthogonal to the directions in which said first and second surfaces extend, respectively, said first and second surfaces being displaceable when power is applied to said X and Y drive means, respectively, to effect displacements of said sphere and imparting pivotal movements to said mirror.

4,341,445

LIQUID CRYSTAL DISPLAY ELEMENT AND PRODUCTION THEREOF

Shigeru Matsuyama; Masaharu Koyama, and Yukihiro Sato, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 1, 1980, Ser. No. 136,370

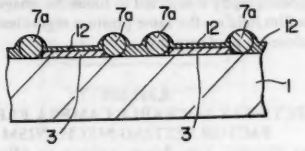
Claims priority, application Japan, May 18, 1979, 54-60436

Int. Cl.³ G02F 1/13

U.S. Cl. 350—344 **9 Claims**

1. A liquid crystal display element comprising a pair of electrode substrates facing each other at a constant distance, each electrode substrate comprising a transparent substrate and an electrode film adhered to the inside surface thereof, a pair of

orientation controlling films formed on the electrodes and a sealant which may contain a spacer and seals the peripheral portions of the electrode substrates to form a space which is



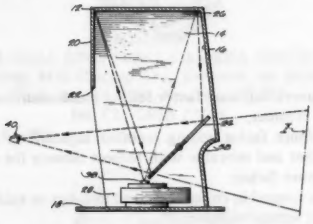
filled with a liquid crystal material, characterized in that one of the orientation controlling films contains a uniformly dispersed spacer therein.

4,341,446

MICROFICHE READING CARREL

Russell J. Burkel, Hartland, Wis., assignor to Realist, Inc., Menomonee Falls, Wis.

Filed Oct. 27, 1980, Ser. No. 201,059
Int. Cl.³ G03B *21/24*
U.S. Cl. 353—77 **3 Claims**



1. A microfiche reading carrel comprising:

a generally rectangular enclosure having long dimension vertically disposed and including a top, bottom, sides, back and a front which depends from the top only part ways towards the bottom to leave a substantial front opening in the lower portion of the front, said bottom extending forwardly of the sides and top,

the upper surface of said bottom and the inside surfaces of said front, back and sides being non-reflecting black,

a microfiche projector mounted on said bottom to project an image onto the underside of said top,

said underside of the top having a flat white surface serving as a projection screen which does not enhance or brighten the projected image,

a front surface mirror mounted inside the enclosure to the rear of the light path of the projected image, said mirror being mounted for adjustment about a horizontal axis generally on the horizontal axis of the mirror,

the image on the screen being reflected by the mirror to the person using the carrel through the front opening.

4,341,447

INFRARED CAMERA RANGING SYSTEM

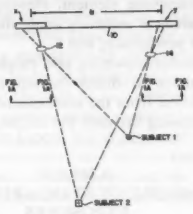
Conrad H. Biber, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 1, 1980, Ser. No. 211,639
Int. Cl.³ G03B *7/08*
U.S. Cl. 354—25 **8 Claims**

1. A passive ranging system for photographic apparatus, said system comprising:

means for sensing infrared radiation emitted by one or more subjects in a scene to be photographed, said sensing means including first and second sensor members of given length spaced apart a predetermined distance in a given direction and means for imaging radiation from a subject on said sensor members;

means for comparing the position of the subject image defined by said emitted radiation on each said sensor member as measured along said given direction and, in accordance therewith, determining the separation of said sub-



ject images along said given direction and the angular relationship between each sensor member and the subject forming such image; and

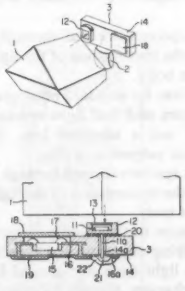
means for determining the distance to said subject by triangulation employing said separation of said images and said angular relationship.

4,341,448

LIGHT RECEIVING ELEMENT ASSEMBLY IN A CAMERA

Kenji Toyoda, and Haruo Hirano, both of Kawasaki, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 943,759, Sep. 19, 1978, abandoned. This application Feb. 27, 1980, Ser. No. 125,274
Claims priority, application Japan, Sep. 26, 1977, 52/114713
Int. Cl.³ G03B *7/00*
U.S. Cl. 354—59 **11 Claims**



9. A light receiving element assembly for use in a camera having a pentaprism and an associated eyepiece comprising:

a prism member adapted to be positioned adjacent to the eyepiece and to the pentaprism for receiving a portion of a light beam passing through an emergent light surface of the pentaprism, the prism member reflecting said portion of the light beam along the emergent light surface of the pentaprism;

a package enclosing a light receiving element for receiving the reflected light beam from the prism member, the light receiving element having output terminals for producing outputs responsive to the amount of light received;

a block of insulating material having a cavity therein and extending along the emergent light surface of the pentaprism, the package being mounted on the block of insulating material;

an integrated circuit chip for treating a signal from the light

receiving element, the integrated circuit chip being enclosed within the cavity in the block of insulating material; and

a conductor pattern having a first portion disposed within the block of insulating and terminating within the cavity and connected to the integrated circuit chip, and having a second portion disposed on a surface of the block of insulating material and connected to the output terminals of the light receiving element, thereby forming said light receiving element assembly along the emergent light surface of the pentaprism; and

insulating material covering said output terminals and said second portion to shield the output terminals and the second portion from the atmosphere and reduce leakage currents flowing between the output terminals.

4,341,449
CAMERA CAPABLE OF STANDARD AND CLOSE-UP EXPOSURES

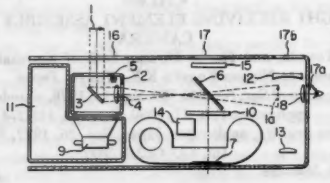
Hiroshi Iwata, Nara, and Akitoshi Morioka, Settsu, both of Japan, assignors to West Electric Co., Ltd., Osaka, Japan

Filed Aug. 25, 1980, Ser. No. 181,071

Claims priority, application Japan, Aug. 31, 1979, 54-111897; Oct. 12, 1979, 54-132347

Int. Cl.³ G03B *3/00, 13/12, 15/03*

U.S. Cl. 354—126 **17 Claims**



1. A camera capable of standard and close-up exposures comprising

a first light aperture formed through a camera body for permitting the transmission of the light from a subject into said camera body,

an optical system for standard photography for transmitting the light from said first light aperture through a shutter mechanism and a standard lens, thereby focusing the image of said subject on a film,

a second light aperture formed through said camera body for permitting the transmission of the light from a subject into said camera body,

an optical system for close-up photography having at least one magnifying objective and a reflecting mirror for directing the light from said second light aperture to said shutter mechanism, thereby focusing the magnified image of said subject on a film,

a selection means for selecting said optical system for standard photography or said optical system for close-up photography,

a standard viewing optical system used in conjunction with said optical system for standard photography for permitting a photographer to view the image of a subject to be exposed through said optical system for standard photography,

a close-up viewing optical system used in conjunction with said optical system for close-up photography for permitting a photographer to view the image of a subject to be exposed through said optical system for close-up photography,

a flash-light source disposed within said camera body for emitting flash-light for flash exposure, and an auxiliary light source disposed within said camera body and used for illuminating a subject so as to facilitate the viewing thereof,

whereby by said selection means either said optical system for standard photography or said optical system for close-up photography is selected to focus the image of a subject on a film held on the same position regardless of standard or close-up photography.

4,341,450
SELECTIVELY LOCKABLE CAMERA EXPOSURE FACTOR SETTING MECHANISM

Masaharu Shigoku, Yao, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 4, 1981, Ser. No. 260,206

Claims priority, application Japan, May 12, 1980, 55-65377[U]

Int. Cl.³ G03B *9/02, 17/00*

U.S. Cl. 354—273 **11 Claims**

1. A camera exposure factor setting mechanism comprising:

a fixed member;

an exposure factor setting member adjacent to said fixed member and movable with respect thereto for setting an exposure factor;

a recess formed in either said fixed member or said exposure factor setting member;

a lock member provided on the other of said fixed member or said exposure factor setting member, said lock member being movable between a first position allowing movement of said exposure factor setting member and a second position wherein said lock member engages said recess for preventing movement of said exposure factor setting member; and

visible indication means including a distinguishably colored portion for alternately enabling said colored portion externally visible and invisible depending on the position of said lock member.

4,341,451
CAMERA HAVING DEPTH OF FOCUS INDICATING MEANS

Roland Krueger, Wolfenbuettel; Joachim Proske, Brunswick; Ortwin Rösner, Munich, and Walter Swarofsky, Brunswick, all of Fed. Rep. of Germany, assignors to Rollei-Werke Franke & Heidecke GmbH & Co. KG, Brunswick, Fed. Rep. of Germany

Filed Apr. 6, 1981, Ser. No. 251,122

Claims priority, application European Pat. Off., Apr. 5, 1980, 80101837

Int. Cl.³ G03B *3/08, 17/20*

U.S. Cl. 354—289 **16 Claims**

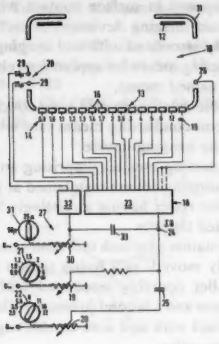
1. A device for indicating the depth of field of a camera having aperture setting means and range setting means comprising:

(a) a plurality of optically active elements positioned for view in the camera viewfinder;

(b) scale means associated with said optically active elements,

(c) said aperture setting means including means for producing an A.C. voltage for a given value of aperture setting,

(d) said range setting means including means for producing a D.C. voltage for a given value of range setting, and



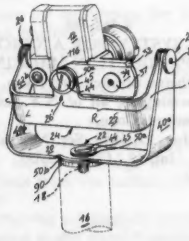
(e) means for energizing selected adjacent ones of said optically active elements to indicate a depth of field, said energizing means responsive to said A.C. voltage and said D.C. voltage.

4,341,452

TRIAXIAL UNIVERSAL CAMERA MOUNT

Torkel Korling, 1410 Chicago Ave., Evanston, Ill. 60201

Filed Aug. 10, 1981, Ser. No. 291,272
Int. Cl.³ G03B *17/56*
U.S. Cl. 354—293 **41 Claims**



1. An improved camera mount comprising in operative combination:

(a) a first, outer yoke having a planar base portion and a pair of upstanding arms at opposite ends of said base portion;

(b) a second, inner yoke having a pair of upstanding arms and a planar back portion therebetween;

(c) said inner yoke being nested within and pivotally connected by a pair of pivot assemblies to said first yoke adjacent the ends of the arms thereof, said pivot assemblies being aligned to form a horizontal axis;

(d) said outer yoke having means defining a pivotable connection to a tripod disposed in said base portion for releasably securing said mount on said tripod, said base pivotable connection defining a vertical axis normal to said horizontal axis;

(e) means defining a pivot assembly disposed in said inner yoke back for pivotally securing a camera holder assembly to said inner yoke, said inner yoke back pivot assembly defining a third axis normal to said horizontal and vertical axes;

(f) a universal camera holder assembly means for removably securing a camera secured to said inner yoke by said inner yoke back pivot assebly, said universal camera holder assembly having means for adjusting the position of the axis of a lens of said camera so that said lens axis is collimated with said third axis;

(g) said horizontal axis and said vertical axis intersecting said collimated third, lens axis;

(h) said pivot assemblies, base pivotal connection, and inner yoke back pivot assembly being adapted to provide sufficient frictional resistance to turning to permit said yokes and camera to be pivoted from a first to a second position and remain in said second position to which pivoted;

(i) said yokes and universal camera holder assembly means being adapted to maintain said camera substantially in balance about its center of gravity; and

(j) said elements (a) through (i) incombination providing a triaxial universal camera mount removably securable to a manually portable tripod, and permitting:

(i) rotational movement of said camera from a horizontal to vertical frame orientation around the lens axis, and

(ii) upward or downward tilting of said camera around the horizontal axis

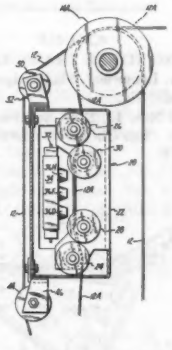
without introduction of translational or parallax errors necessitating reframing or refocusing of the camera, and without manipulation of pivot releasing/tightening levers.

4,341,453

PHOTOGRAPHIC FILM TYPE SENSOR

Barry P. Rubin, Maple Grove, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed May 7, 1981, Ser. No. 261,040
Int. Cl.³ G03D *3/08*
U.S. Cl. 354—298 **17 Claims**



1. A photographic film type sensor apparatus for identifying a film web, the apparatus comprising:

an array of sensor means positioned across a path of the web, each sensor means sensing presence of the web adjacent the sensor means;

means for counting the number of sensor means which have sensed presence of the web during each of a plurality of width determining cycles;

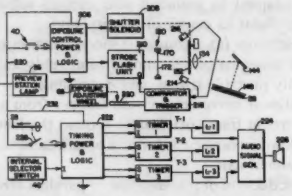
means for making a width determination for each of the width determining cycles based upon the counted number of sensor means during the cycle; and

means for identifying the web by film width based upon a total of the width determinations from the plurality of width determining cycles.

4,341,454
SELF-DEVELOPING PHOTOGRAPHIC APPARATUS WITH MULTIPLE TIMERS

Philip G. Baker, Peabody, and Gerald L. Matthews, Raynham, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 152,858, May 23, 1980, Pat. No. 4,300,827. This application Aug. 12, 1981, Ser. No. 292,237
Int. Cl.³ G03D 5/02
U.S. Cl. 354—304 **5 Claims**



1. Photographic apparatus for separately timing a predetermined imbibition period for each of a plurality of sequentially processed self-developing film units, said apparatus comprising:

means for processing such a film unit in response to advancing the film unit relative to said processing means;

means for providing an output signal in response to each advancement of a film unit relative to said processing means;

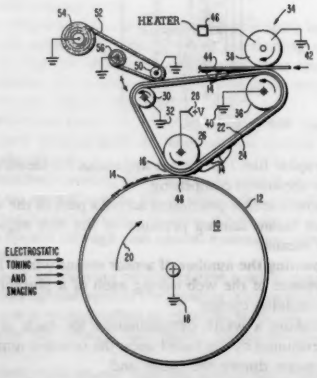
a plurality of timers, each being operable upon actuation for timing the predetermined imbibition period; and

means responsive to an output signal for selecting and actuating one of said plurality of timers to time the imbibition period of a corresponding processed film unit, said selecting and actuating means being configured so that said plurality of timers are actuated in a predetermined sequence in response to successive output signals.

4,341,455
CONDUCTING TONER TRANSFER APPARATUS

Richard C. Fedder, Longwood, Fla., assignor to Burroughs Corporation, Orlando, Fla.

Filed Nov. 13, 1979, Ser. No. 93,219
Int. Cl.³ G03G 15/00
U.S. Cl. 355—3 TR **1 Claim**



1. Magnetic conductive toner transfer apparatus comprising, an imaging device having an image receiving dielectric surface on which an electrostatic toned image is accepted and carried,

semi-conducting means carrying a highly insulating dielectric film disposed in surface contact with the dielectric surface of said imaging device,

means operably associated with said imaging device and said semi-conducting means for applying an electrical potential to said last named means,

means moveable relative to said semi-conducting means to keep said semi-conducting means taut with respect to the surface of the imaging device;

said semi-conducting means comprising an endless loop or belt and tensioning rollers maintained at ground potential and a transfer roller having a relatively high voltage potential applied thereto;

a toner fusing station to which said semi-conducting means is continuously moved, said fusing station including a first pressure roller operably associated with said semi-conducting means and a second pressure roller in confronting surface contact with said semi-conducting means and said first pressure roller;

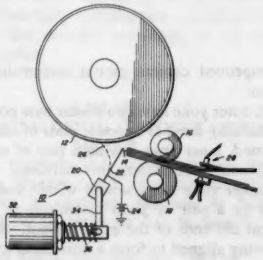
heater means operably associated with said second pressure roller effective when energized to cause toner to fuse under pressure and heat to a secondary substrate such as paper which may be introduced into the nip between said first and second rollers to receive a toned and fixed image corresponding to the image carried by said imaging device; and

continuously renewable means for removing toner and charge from said dielectric film by bringing unused means into cleaning contact with said film.

4,341,456
TRANSFER SYSTEM FOR A XEROGRAPHIC REPRODUCTION MACHINE

Venkat K. Iyer, Webster; Stephen Borostyan, Victor, and Timothy T. Blair, Farmington, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 27, 1980, Ser. No. 163,459
Int. Cl.³ G03G 15/00
U.S. Cl. 355—3 TR **3 Claims**



1. An improved transfer apparatus for transferring a toner image from a photoreceptor to a copy sheet, said transfer apparatus comprising:

a brush having conductive bristles positioned adjacent to but out of contact with the photoreceptor,

means for electrically biasing the bristles, and

means for causing the lead edge of the copy sheet to deflect the brush fibers after which the brush fibers contact the back of the copy sheet and remain in contact with the back of the copy sheet as the copy sheet is moved into contact with the toner image on the photoreceptor so that transfer of the toner image is effected.

4,341,457

ELECTROPHOTOGRAPHIC APPARATUS INCLUDING AN ELECTROSTATIC SEPARATION DEVICE

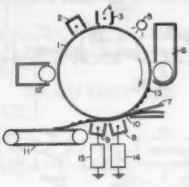
Kimio Nakahata, Kawasaki; Koichi Tanigawa, and Hiroyuki Adachi, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

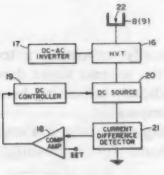
Filed Sep. 8, 1980, Ser. No. 184,663

Claims priority, application Japan, Sep. 13, 1979, 54-117782; Sep. 13, 1979, 54-117783

Int. Cl.[3] G03G *15/00, 15/16*

U.S. Cl. 355—3 CH 31 Claims





1. An electrophotographic apparatus comprising:

an image bearing member having a latent image on the surface thereof;

developing means for developing the latent image on said image bearing member;

means for imparting a charge to the back side of a transfer medium by corona discharge to thereby transfer the developed image on said image bearing member to the transfer medium;

means for applying to the back side of the transfer medium a corona discharge substantially opposite in polarity to said transfer corona discharge to thereby separate the transfer medium from the surface of said image bearing member; and

means for maintaining substantially constant the amount of charge imparted to the transfer medium by said transfer corona discharge irrespective of charges on the image bearing portion or the non-image bearing portion of said image bearing member.

4,341,458

THERMAL PRESSURE FIXING DEVICE

Winfried Glasa, Frankfurt, and Peter Gumm, Glashütten, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 22, 1980, Ser. No. 199,663

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943344

Int. Cl.[3] G03G *15/20*

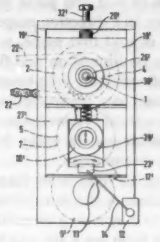
U.S. Cl. 355—3 FU 24 Claims

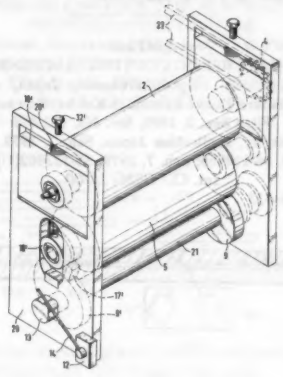
1. A thermal pressure fixing device for a copier, comprising:

a fixing roll and a pressure roll, said pressure roll being slideably positioned adjacent to said fixing roll;

means, including a shaft and a clutch and brake mechanism fitted on said shaft, for moving said pressure roll towards said fixing roll during a thermal pressure fixing step and for separating said pressure and fixing rolls when the copier malfunctions or is shut off;

means, including at least one resilient element in contact with said fixing roll, for adjusting the distance between the axes of said rolls to maintain a constant pressure between said rolls by compensating for changes in roll diameter; and





bearing plates for said fixing roll, wherein the lower ends of the resilient elements are in contact with upper sides of said bearing plates for said fixing roll.

4,341,459

SCANNING PROJECTION APPARATUS

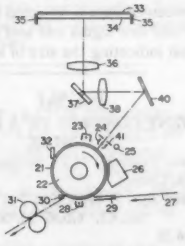
Muneharu Sugiura, Tokyo; Kazuo Minoura, Yokohama, and Setsuo Minami, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1979, Ser. No. 92,070

Claims priority, application Japan, Nov. 14, 1978, 53/140112

Int. Cl.[3] G03G *15/28;* G03B *27/34*

U.S. Cl. 355—8 10 Claims



1. A scanning projection apparatus for successively projecting, on light receiving means, an image of each portion of a first plane, comprising:

a first imaging optical system having one focal plane on said

first plane wherein said first optical system is for collimating a light beam from said first plane and having means for maintaining a constant image magnification of the image of each portion of said first plane projected on said light receiving means, in a direction perpendicular to the scanning direction of said first plane, while maintaining said one focal plane positioned on said first plane;

a deflector for deflecting the light beam from said first imaging optical system to a predetermined direction;

a second imaging optical system for receiving the light beam from said deflector and focusing the light beam on said light receiving means; and

means for limiting the light beam focused on said light receiving means into a slit form elongated in a direction perpendicular to a scanning direction of said first plane, wherein the slit form has a slit width ΔS which satisfies a relation $\Delta S < 1/R_p$ for a predetermined resolving power R_p on said light receiving means.

4,341,460

ELECTRONIC COPYING MACHINE

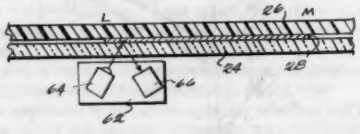
Mitsuaki Kohyama, Higashikurumeshi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 3, 1980, Ser. No. 183,408

Claims priority, application Japan, Sep. 7, 1979, 54-114964; Sep. 7, 1979, 54-114965; Sep. 7, 1979, 54-123802[U]

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—13 **8 Claims**



1. A method of detecting the size of an original to be copied in a copying apparatus by utilizing an electrostatic latent image formed on the surface of photo insulating material, said original being placed between a transparent surface and a cover which has less reflectivity to light at one given wavelength than at a second given wavelength and different reflectivity from said original to said one given wavelength, said photo insulating material being exposed by light including at least said second given wavelength comprising:

directing said light at said one given wavelength onto said cover and said original;

detecting the intensity of light received at substantially said one given wavelength;

producing a first signal indicating when said received light is reflected from said cover and a second signal indicating when said received light is reflected from said original and comparing said first signal and said second signal to produce a signal indicating the size of said original.

4,341,461

DEVELOPMENT CONTROL OF A REPRODUCTION MACHINE

Louis J. Fantozzi, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 7, 1980, Ser. No. 137,710

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 D **4 Claims**

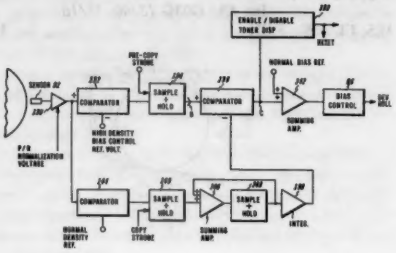
1. A sample data developer control in a reproduction machine having a developer and a photoreceptor surface supporting toner images comprising

a bias control electrically connected to the developer,

a first comparator electrically connected to the bias control,

a test target for providing a sample image on the photoreceptor in the photoreceptor image area, means for developing the sample image,

means for indicating a first toner density condition on the sample image, the means for indicating being electrically connected to the comparator, the bias control responding to the first toner density condition to change the bias on the developer to provide a second toner density condition on the image,



means for periodically indicating a toner density image deviating from the second toner density condition, the means for periodically indicating being electrically connected to the comparator,

the bias control being responsive to the comparator to maintain the second toner density condition.

4,341,462

COPYING MACHINE WITH COLLATING APPARATUS

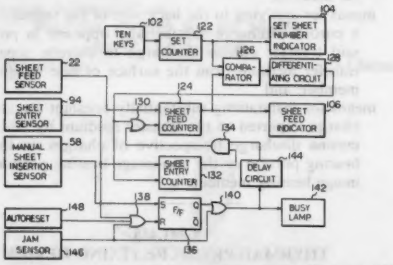
Masaaki Ogura, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 24, 1980, Ser. No. 190,106

Claims priority, application Japan, Apr. 7, 1980, 55-44714

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 SH **9 Claims**



1. A copying machine including a collating apparatus provided with a manual sheet insertion device, comprising:

setting means for setting a number of sheets to be copied by the copying machine;

sheet feed sensor means provided in a sheet feed station of the copying machine to detect feeding of sheets from the sheet feed station;

manual sheet insertion sensor means provided in the manual sheet insertion device to detect insertion of a sheet into the manual sheet insertion device;

sheet entry sensor means provided in the collating apparatus to detect entry of sheets into bins of the collating apparatus; and

control means responsive to outputs of the setting means, the sheet feed sensor means, the manual sheet insertion sensor means and the sheet entry sensor means to control the copying machine and the collating apparatus such that

when a sheet is manually inserted into the manual sheet insertion device, a number of sheets fed from the sheet feed station is automatically corrected in response to the entry of said sheet into a desired bin of the collating apparatus.

4,341,463
IMAGE REPRODUCING APPARATUS

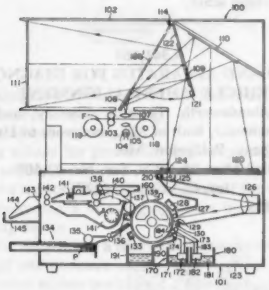
Kazuo Kashiwagi, Tokyo; Toshio Arai, Kawasaki; Takao Toda, Tokyo; Masanari Shirai, Chigasaki, and Masaaki Yanagi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1981, Ser. No. 228,721

Claims priority, application Japan, Feb. 5, 1980, 55/12691; Jan. 6, 1981, 56/566

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 CH 13 Claims



1. An image reproducing apparatus, comprising:

illuminating means for illuminating a microfilm having recorded images therein;

charging means for positively or negatively charging a photosensitive member;

optical means for projecting an image of the microfilm illuminated by said illuminating means onto said photosensitive member;

measuring means for measuring the amount of light from the microfilm illuminated by said illuminating means; and

charge control means for selecting the polarity of charge to be given to said photosensitive member in response to the result of measurement by said measuring means.

4,341,464
REPRODUCTION APPARATUS EMPLOYING A CASSETTE WITH A FINITE BELT

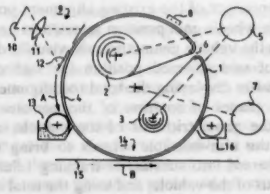
Mathias J. J. M. Vola, Velden, Netherlands, assignor to Océ-Nederland B.V., Venlo, Netherlands

Filed Feb. 17, 1981, Ser. No. 234,890

Claims priority, application Netherlands, Feb. 27, 1980, 8001166

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—16 7 Claims



1. A reproduction apparatus comprising a rotatable drum having mounted therein two reels for holding a finite length of belt that is impressible with image information, said belt extending and being movable between said reels over the circumferential surface of said drum; a transfer station adjacent to said surface and wherein image information is transferrable from said belt to receiving material moving through said station at a processing velocity; drive means for transporting said belt back and forth between said reels and thus over said drum surface and past said transfer station for transferring image information from the belt to the receiving material; and drum drive means operative when the belt is being transported in either direction over said drum surface to keep said drum at a peripheral velocity which, in magnitude and direction, is equal to said processing velocity minus the velocity at which the belt is being transported over said surface.

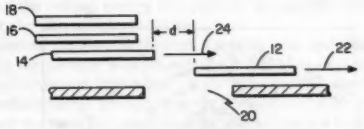
4,341,465
EXPOSURE CONTROL FOR SUBTRACTIVE PHOTOGRAPHIC PRINTER

James F. Stewart, Shoreview, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Sep. 11, 1980, Ser. No. 186,189

Int. Cl.³ G03B *27/72, 27/76*

U.S. Cl. 355—36 4 Claims



2. A subtractive photographic printer comprising:

means for providing light along a light path;

a shutter normally positioned in the light path;

a color filter for terminating exposure in a selected color channel when positioned in the light path;

shutter drive means for driving the shutter in a first direction from its normal position to a position out of the light path;

filter drive means for driving the color filter in essentially the first direction into the light path to terminate exposure in the selected color channel; and

exposure control means for controlling exposure time for the selected color channel by actuating the shutter drive means to drive the shutter to the position out of the light path and, after a time delay essentially corresponding to a desired exposure time for the selected color channel, actuating the filter drive means to drive the color filter into the light path at essentially the same rate at which the shutter was driven to a position out of the light path, so that the exposure time is essentially a function of the time delay and essentially not dependent upon the rate at which the shutter is driven.

4,341,466
METHOD AND APPARATUS FOR DISPLAYING THREE COORDINATES OF AN OBJECT IN A TWO DIMENSIONAL PLANE

David L. Dyregrov, P.O. Box 255, Waterford, Va. 22190

Filed Jun. 20, 1980, Ser. No. 161,361

Int. Cl.³ G03B *27/48, 27/50*

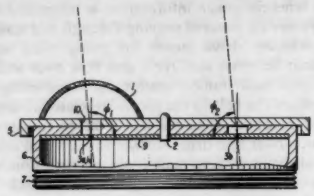
U.S. Cl. 355—50 16 Claims

1. A method for making a display of objects in a two dimensional plane, wherein a third dimension is represented by a change in contrast comprising:

scanning said objects with a substantially collimated light beam whereby a plurality of raster lines are formed on said objects, and

photographing said objects during the time said objects are

being scanned whereby a photograph is produced of said objects with a plurality of raster lines appearing on each image representing each object in said photograph, at least



one dimension of each image raster line being indicative of the relative distance between objects represented in said images.

4,341,467

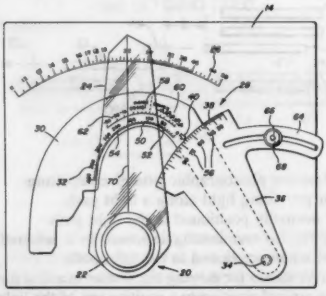
EXPOSURE GUIDE

John N. Ghougasian, 2660 Kings Bridge Ter., Bronx, N.Y. 10463

Filed Sep. 23, 1980, Ser. No. 189,747

Int. Cl.³ G03B *27/52*

U.S. Cl. 355—61 **3 Claims**



1. In combination with a copying camera lens assembly of the type including a base having stationary lens assembly mounted thereon including a rotatable lens aperture adjusting component, an exposure guide including a first scale component stationarily mounted on said base, a pointer mounted relative to said rotatable lens component for angular displacement therewith relative to said first scale component, said first scale component including a first linear lens stop scale thereon relative to which said pointer is registered and along which said pointer may swing, a second scale component including a second linear size compensation scale thereon with which said pointer is registered and along which said pointer may swing, means supporting said second scale component from said base for lengthwise back and forth shifting relative thereto to effect longitudinal shifting of said size adjustment scale transversely of said pointer in a path generally paralleling the plane in which said pointer is swingable, and a third scale component including a third linear density value scale thereon, means supporting said third scale component from said base for back and forth shifting relative thereto for longitudinal shifting of said density scale transverse to the longitudinal extent of an adjacent portion of said size compensation scale, said size compensation scale being arcuate and said second scale component being pivotally supported from said first scale component for angular displacement about an axis appreciably spaced from and general paralleling the axis of rotation of said lens aperture adjusting component relative to said stationary component, said second scale component including indicia registered with and movable along said third scale component responsive to angular displacement of said second scale component relative to said base and said third scale component, said first linear scale being arcuate and extending along an arc segment generally concentric with the center of angular displacement of said pointer relative to said base, said second scale component being pivotally supported from said base, said second linear size compensation scale also being arcuate and lying upon an arc segment whose radius of curvature is appreciably shorter than the spacing of said second linear size component scale from the pivot axis of said second scale component relative to said base, one end portion of said second linear size compensation scale extending generally radially of said last mentioned axis, said third scale component being pivotally supported from said base for angular displacement relative thereto about said last mentioned axis, said third linear density value scale being arcuate and extending along an arc segment generally concentric with said axis last mentioned, said second scale component including indicia adjacent said one end of said second linear size compensation scale registered with said third linear density value scale.

4,341,468

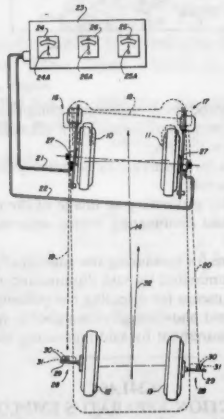
METHOD AND APPARATUS FOR DIAGNOSING VEHICLE WHEEL ALIGNMENT

William J. Hollandsworth, Town & Country, and Dean O. Grubbs, Manchester, both of Mo., assignors to Hunter Engineering Company, Bridgeton, Mo.

Filed Mar. 23, 1979, Ser. No. 23,403

Int. Cl.³ G01B *11/275*

U.S. Cl. 356—155 **5 Claims**



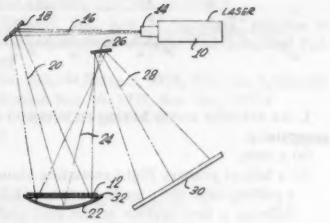
1. A method for diagnosing vehicle wheel alignment in which the vehicle has steerable and non-steerable wheels longitudinally spaced and at either side of the geometric axis, said method comprising: mounting alignment diagnosing instruments on the steerable and non-steerable wheels and compensating the instruments for wheel run-out; moving the steerable wheels such that one thereof has its plane of rotation aligned, initially independent of the existing alignment positions of the non-steerable wheels, in a position selected to be substantially parallel with the vehicle geometric axis; visually displaying the attainment of said selected position for said one steerable wheel; thereafter displaying the total toe alignment characteristics of the planes of rotation of the non-steerable wheels relative to the geometric axis of the vehicle; adjusting the position of the non-steerable wheels to bring the total toe alignment thereof into substantial tracking relation with the geometric axis of the vehicle; and using the total toe alignment display for monitoring the effect of the adjustment to the non-steerable wheels.

4,341,469

LASER SHADOWGRAPH

Mark E. Gardiner, Westwood, and David W. Kuntz, Pacific Palisades, both of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Filed Jun. 18, 1980, Ser. No. 160,611
Int. Cl.[3] G01N *21/41*
U.S. Cl. 356—239 5 Claims



1. Shadowgraph apparatus for the inspection of transparent discs, said apparatus comprising:

a source of coherent light;

focusing means for producing a divergent beam from said light source;

a concave mirror disposed in the path of the divergent beam for producing a converging beam by reflecting said diverging beam;

means for supporting a disc to be examined within the aperture of said concave mirror; and

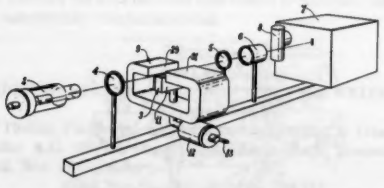
a projection screen positioned in the path of light reflected from said concave mirror beyond the convergence point thereof, whereby a shadowgraph image of the disc to be examined is formed on said projection screen.

4,341,470

ATOMIC ABSORPTION SPECTROSCOPY

Clive Parker, Mount Waverly, and Antony Pearl, Park Orchards, both of Australia, assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 376,498, Jul. 5, 1973, abandoned, which is a continuation of Ser. No. 208,772, Dec. 16, 1971, abandoned. This application Jun. 22, 1977, Ser. No. 810,232
Claims priority, application Australia, Jan. 5, 1971, 364371
Int. Cl.[3] G01J *3/42*; G01N *21/72, 21/74*
U.S. Cl. 356—307 30 Claims



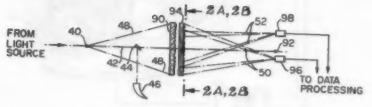
1. Atomic spectrum analysis apparatus for elements exhibiting an anomalous Zeeman splitting characteristic including a light source made from an element exhibiting an anomalous Zeeman splitting characteristic, atomizing means for directing a cloud of an atomized sample into the path of a beam of light emitted by said source, photoelectric detection means for detecting and measuring the intensity of a selected spectral line of the atomic emission spectrum of said light source after said line has passed through said atomized sample, and transverse magnetic field means operative upon said atomized sample to cause anomalous Zeeman splitting of the absorption profile of said cloud of atoms, means to cause said photoelectric detection means to sense the effect of said splitting in the relationship between said selected emission line and a corresponding absorption line of said atomized sample, wherein said means to cause said photoelectric detection means to sense the effect of said splitting includes means to modulate said magnetic field.

4,341,471

APPARATUS AND METHOD FOR MEASURING THE DISTRIBUTION OF RADIANT ENERGY PRODUCED IN PARTICLE INVESTIGATING SYSTEMS

Walter R. Hogg, South Miami, and Albert Brunsting, Miramar, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Jan. 2, 1979, Ser. No. 439
Int. Cl.[3] G01N *21/53*
U.S. Cl. 356—343 84 Claims



1. A method of measuring the directional distribution properties of the radiant energy of a particle for particle identification or the like which comprises:

A. passing the particle through a sensing zone and illuminating the particle with an incident beam of radiant energy,

B. collecting at least some of the directionally distributed radiant energy produced by the intersection of the particle and the beam and projecting the same toward a focal point in space remote from the sensing zone,

C. intercepting the projected portion of radiant energy and deviating the same along a plurality of different paths independently of the collecting,

i. each path being arranged to comprise the radiant energy gathered from a particular geometric area of the projected portion,

ii. the geometric areas being different,

iii. the axis of each path being deviated from extending toward said remote point in space,

iv. each path serving to cause confluence of the radiant energy of its said path at a particular location,

v. the locations of the respective confluences of radiant energy being spaced from one another, and

D. measuring the respective intensities of the radiant energy confluence at the respective locations where confluenced.

4,341,472

METHOD AND APPARATUS FOR POSITIONING A TAPERED BODY

Istvan Gorog; Marvin A. Leedom, and James P. Wittke, all of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,158
Int. Cl.[3] G01B *11/00*
U.S. Cl. 356—399 10 Claims

6. An apparatus for positioning a body having a tapered profile when viewed along a first axis, comprising:

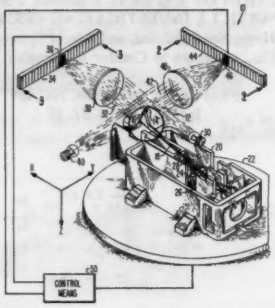
a first light source positioned to expose said body to a first beam of light oriented along said first axis,

a first linear array of photodetectors disposed along a direction substantially orthogonal to both said first axis and the direction of said taper in a position such that a linear section across said tapered profile is projected by said first light beam, as a first silhouette-like image, onto said first photodetector array,

a second light source positioned to expose said body to a second beam of light oriented along a second axis substantially orthogonal to said first axis,

a second linear array of photodetectors disposed along a direction substantially parallel to said first axis in a position such that a second linear section across said body is projected by said second light beam, as a second silhouette-like image, onto said second photodetector array,

means for moving said body along said first and said second axes to allow said first and said second images to strike



predetermined locations along said first and said second photodetector arrays, and

means for changing the location of said body along a third axis, orthogonal to said first and said second axes, in order to allow the width of said first image to equal a predetermined width measured by the linear magnitude of the first image along said first photodetector array.

4,341,473

MEASURING HEAD IN OR FOR A DENSITOMETER

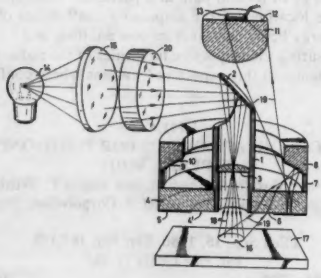
Fred Mast, Wil, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Sep. 22, 1980, Ser. No. 189,115

Claims priority, application Switzerland, Sep. 28, 1979, 8791/79

Int. Cl.³ G01N *21/47*

U.S. Cl. 356—446 **19 Claims**



1. In or for a densitometer, a measuring head comprising a light source, a photoelectric transducer and an optical system for providing a light path between the source and the transducer via a location at which an object to be measured is received, the optical system including means to form a defined spot of light at said location to illuminate an area of an object received thereat and means to guide light from the illuminated area to the transducer; the improvement comprising means in said light path to provide at the transducer a light intensity response across the spot that follows a bell-shaped curve having its maximum at the center of the spot and being symmetrical about the spot center.

4,341,474

EXTRUDER SCREW

Norton C. Wheeler, Jr., Money Point Rd., Mystic, Conn. 06355, and Waseem Rahim, 85 Crouch St., Groton, Conn. 06340

Filed Aug. 27, 1980, Ser. No. 181,920

Int. Cl.³ B29B *1/06*

U.S. Cl. 366—88 **7 Claims**

1. An extruder screw having an inlet end and an outlet end comprising:

(a) a root,

(b) a helical primary flight extending about the root having a trailing edge and a leading edge, said flight and said root defining a feed section at the inlet end of the screw, a metering section at the outlet end of the screw and a melting section between the feed section and the metering section, and

(c) a helical barrier flight on the root forming a solids channel with the trailing edge of the primary flight and a melt channel with the leading edge of the primary flight, the width of the solids channel gradually decreasing and the width of the melt channel gradually increasing in a downstream direction, said melting section being divided into at least two lengthwise zones, wherein the change in width of each of said channels is at a first constant rate in one of the zones and a second constant rate in the other of the zones, said rates being in accordance with the melting characteristics of the thermoplastic material in the screw.

4,341,475

APPARATUS FOR DRIVING A RIGID BODY FOR THE PURPOSES OF PRODUCING A TUMBLING MOVEMENT DURING ROTATION OF THE BODY

Josef Saladin, Wil, Switzerland, assignor to Bürgel AG, Basel, Switzerland

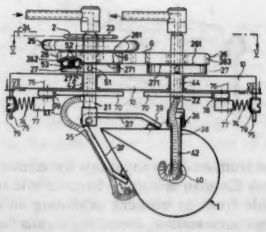
PCT No. PCT/CH80/00027, § 371 Date Oct. 30, 1980, § 102(e) Date Oct. 30, 1980, PCT Pub. No. WO80/01830, PCT Pub. Date Sep. 4, 1980

PCT Filed Feb. 26, 1980, Ser. No. 201,405

Claims priority, application Switzerland, Mar. 1, 1979, 1993/79

Int. Cl.³ B01F *11/00*; F16H *21/46*

U.S. Cl. 366—211 **15 Claims**



1. Apparatus for producing a tumbling rotary movement comprising a body which, for producing tumbling movements in gimbal suspensions, is displaceable about two mutually spaced axes directed in different directions and which includes a drive means and a transmission means between the drive means and rotatably journalled shafts with which latter a respective one of the gimbal suspensions for the body is connected, characterised in that the transmission means include

torque-transmitting members one of which is operatively connected with the drive means and another of which is operatively connected with a shaft carrying the gimbal suspension and that resiliently yielding energy stores are arranged between the torque-transmitting members for the periodical alternating storing and releasing of energy forces.

4,341,476

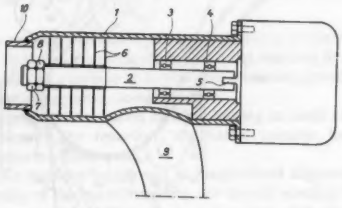
APPARATUS FOR TREATING MATERIALS CONTAINING COCOA BUTTER

Helmut Sollich, Kalletal, Fed. Rep. of Germany, assignor to SOLLICH KG Spezialmaschinenfabrik, Bad Salzuflen, Fed. Rep. of Germany

Division of Ser. No. 902,344, May 3, 1978, Pat. No. 4,195,935. This application Sep. 10, 1979, Ser. No. 73,732

Int. Cl.³ B01F *7/00*

U.S. Cl. 366—293 **9 Claims**



1. In an apparatus for treating substantially viscous materials containing cocoa butter with regard to the air entering therein during processing thereof and which is left in the material but finely and uniformly distributed therein; a plurality of separating elements axially spaced from each other; and conduit means for carrying the viscous material during its flow, said elements being arranged in said conduit means and imparting turbulent motion to the material, which flows together again downstream of said elements, the improvement comprising: said conduit means comprising a housing having a rotatable shaft having said separating elements attached thereto, said housing comprising a lateral feed pipe which provides the viscous material with a directed flow onto the separating elements; said housing also comprising an end spigot positioned at one end of said shaft so as to position said separating elements between said spigot and said lateral feed pipe; said separating element being rotating blades which beat and distribute the air bubbles entrained in the material, said blades being equally spaced and positioned on a shaft, said blades having a sharpened working edge and are arranged longitudinally along said shaft wherein the area between said blades is occupied only by said substantially viscous material.

4,341,477

PAPER HANDLING ASSEMBLY FOR TYPEWRITERS OR LIKE MACHINES

Rolf Theilen, Furth, Fed. Rep. of Germany, assignor to Triumph-Adler A.G. für Büro-und Informationstechnik, Nuremberg, Fed. Rep. of Germany

Filed Nov. 5, 1980, Ser. No. 204,212

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1980, 3008540

Int. Cl.³ B41J *11/20, 13/036*

U.S. Cl. 400—56 **3 Claims**

1. In combination, a frame and a paper handling assembly adapted to be mounted on said frame,

said paper handling assembly comprising side walls and a bottom wall,

a platen rotatably supported between said side walls,

a paper trough having feed rolls,

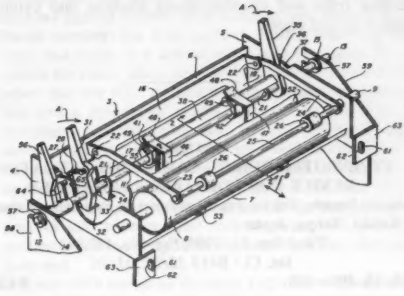
means supporting said paper trough with its feed rolls engaging said platen,

a common shaft rotatably supported on said side walls,

paper bail means rotatably supported on said common shaft,

eccentrics secured to the ends of said shaft outwardly of said side walls adapted to be rotatably mounted in said frame,

first lever means connected to rotate said eccentrics for moving said assembly relative to said frame,



second lever means rotatably mounted on said common shaft an coupled to pivotally move said paper bail means, and

third lever means rotatably mounted on said common shaft and coupled to move said paper trough supporting means to separate said paper trough feed rolls from engagement with said platen.

4,341,478

WIRE PRINTING DEVICE

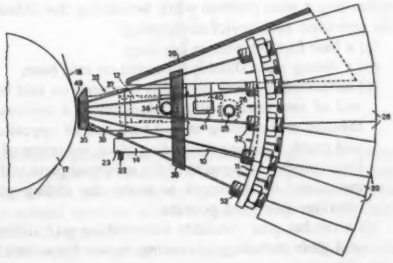
Francesco Bernardis, Ivrea; Contardo Adamoli, Castellamonte, and Franco Cretaz, Pont Saint Martin, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Italy

Continuation of Ser. No. 30,950, Apr. 17, 1979, Pat. No. 4,285,603. This application Feb. 12, 1981, Ser. No. 233,789

Claims priority, application Italy, Apr. 19, 1978, 67885 A/78

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **3 Claims**



2. A wire printing device comprising a cylindrical platen having a central axis and a cylindrical surface; a carriage movable parallel to said central axis at a predetermined distance from said platen and having two parallel lateral sides perpendicular to said central axis and a tongue parallel to said central axis; a base member comprising a single plate having a substantially constant thickness so folded and shaped as to define two rectilinear and parallel lateral arms for being mounted on said lateral sides of said carriage and a curved central portion for connecting said two lateral arms therebetween substantially parallel to the cylindrical surface of said platen; removable mounting means cooperating with said lateral arms and with said lateral sides for mounting said base member on said carriage; sliding means allowing said base member to move with respect to said carriage in a direction perpendicular to said

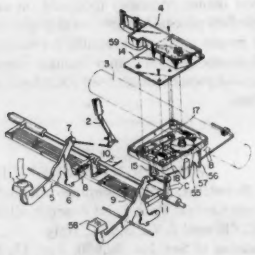
platen; a plurality of substantially rectilinear printing wires each having a printing extremity located near to said platen and an actuating extremity located near to the curved central portion of said base member; a plurality of driving electromagnets mounted on said curved central portion and each having an armature connected with a corresponding actuating extremity of said wires; and guide means supported by said base member for guiding said wires along rectilinear paths all converging from said electromagnets towards said cylindrical surface of said platen.

4,341,479

TYPEWRITER RIBBON CARTRIDGE ACTUATING DEVICE FOR PORTABLE TYPEWRITER

Kokichi Sanada, Tokyo, Japan, assignor to Fuji Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1980, Ser. No. 187,981
Int. Cl.³ B41J *32/02, 33/26*
U.S. Cl. 400—208 **8 Claims**



1. In a typewriter, a device for actuating a ribbon cartridge whenever a typewriter key lever is depressed, said device including actuating means for simultaneously moving the cartridge parallel to the longitudinal axis of a platen of the typewriter into a print position while advancing the ribbon within the cartridge, said device comprising:

(a) a base formed with an opening;

(b) a sliding plate slidably mounted on said base;

(c) an actuating crank pivotably mounted on said base, one end of said crank being connected to a universal plate through said opening in said base and an opposite end of said crank engaging the sliding plate, actuation of the key lever causing movement of the universal plate and pivotal movement of the crank to move the sliding plate and cartridge into print position;

(d) a ratchet gear rotatably mounted on said sliding plate, said gear including advancing means for advancing the ribbon;

(e) a gear actuating crank pivotably secured on the base, said gear crank including a first end engageable with said ratchet gear and a second end connected to the actuating crank;

(f) gear stopper means pivotably secured on the sliding plate for preventing reverse rotation of the ratchet; and

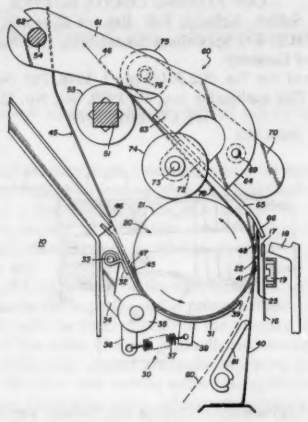
(g) a cover plate including holding means for slidably retaining the cartridge on the plate, said cover plate having a first opening receiving the opposite end of the actuating crank engageable with the cartridge and a second opening receiving said advancing means of the ratchet gear, whereby said first and second openings enable sliding movement of the cartridge on the cover plate during sliding movement of the sliding plate.

4,341,480

FEED MECHANISM FOR CONTINUOUS AND CUT FORM PAPER

Werner H. Mailer, Waynesboro, Va., assignor to General Electric Company, Waynesboro, Va.

Filed Dec. 26, 1979, Ser. No. 106,507
Int. Cl.³ B41J *13/16*
U.S. Cl. 400—625 **5 Claims**



1. Paper transport apparatus for use with discrete sheets of paper in a continuous belt-type line printing machine including a rotatable cylindrical platen, an inked ribbon disposed adjacent to the platen at a printing region, entry drive means for moving the sheets of paper into a printing path extending tangent to the platen through the printing region and past the inked ribbon spaced therefrom, and an exit drive roller spaced from the platen and having a drive surface moving at the same surface speed as that of the platen; said paper transport apparatus comprising

a guide frame including two mounting arms spaced apart longitudinally of the platen adapted for attachment to the printing machine,

a deflecting plate carried by said mounting arms and extending therebetween and spaced from the platen downstream of the printing region for engaging the leading edge of the associated sheet past the printing region,

two adjustment rollers respectively freely rotatably carried by said deflecting plate and adapted for rolling engagement with the platen and cooperating therewith accurately to position said deflecting plate with respect to the platen,

two pivot arms respectively carried by said mounting arms for pivotal movement with respect thereto, and

a pressure roller freely rotatably carried by said adjustment arms therebetween and disposed for cooperation with the drive surfaces of the exit drive rollers frictionally to engage the associated sheet therebetween,

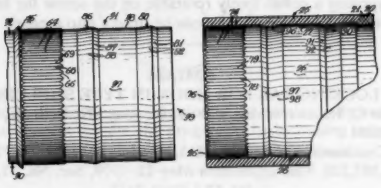
said deflecting plate deflecting the associated sheet into an exit path extending along the platen and thence in a straight line to the exit drive rollers tangent to the platen and such that the leading edge of the sheet moves between the exit rollers and said pressure rollers for engagement thereby when the sheet is in said exit path, whereby the leading edge of the associated sheet is held out of contact with the inked ribbon and is moved around the platen without the formation of slack-producing bulges in the sheet downstream of the printing region.

4,341,481

WRITING INSTRUMENT WITH BARREL AND FERRULE ASSEMBLY

Daniel W. Wollensak, Elmhurst, Ill., assignor to Sanford Research Company, Bellwood, Ill.

Filed Sep. 22, 1980, Ser. No. 189,051
Int. Cl.[3] B43K 15/00, 8/00, 3/00
U.S. Cl. 401—251 11 Claims



1. In a writing instrument of the type having a reservoir for marking fluid and a writing nib for carrying marking fluid from the reservoir to a surface to be marked, a housing assembly for the writing instrument, comprising:

an elongate hollow barrel member having an inner chamber to receive the reservoir, the barrel member having a closed rear distal end;

a ferrule member positioned in longitudinal alignment forwardly of the barrel member, the ferrule member having a passageway therethrough and a free end shaped to snugly receive the writing nib, at least one of said barrel and ferrule members being of resilient material;

adjacent skirt portions on the barrel member and the ferrule member for securing the ferrule member against relative axial rotation with respect to the barrel member, the skirt portions having adjacent open ends and being of a size to make a close mating fit one within the other when moved longitudinally toward each other, the one skirt portion having an outer surface of circular cross section and the other skirt portion having an inner surface of circular cross section, each of said surfaces having peripherally spaced elements positioned for interfitting engagement to prevent said relative axial rotation when the one skirt portion is moved longitudinally into the other skirt portion; and

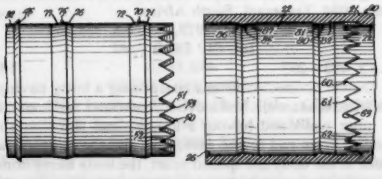
means on the skirt portions for urging the ferrule member toward the barrel member when the peripherally spaced elements are in interfitting engagement.

4,341,482

HOUSING ASSEMBLY FOR FLUID MARKING DEVICE

Daniel W. Wollensak, Elmhurst, Ill., assignor to Sanford Research Company, Bellwood, Ill.

Filed Sep. 22, 1980, Ser. No. 189,053
Int. Cl.[3] B43K 15/00, 8/00, 3/00
U.S. Cl. 401—251 8 Claims



1. In a writing instrument of the type having a reservoir for marking fluid and a writing nib for carrying marking fluid from the reservoir to a surface to be marked, a housing assembly for the writing instrument, comprising:

an elongate hollow barrel member having an inner chamber to receive the reservoir, the barrel member having a closed rear distal end;

a ferrule member positioned in longitudinal alignment forwardly of the barrel member, the ferrule member having a passageway therethrough and a free end shaped to snugly receive the writing nib, at least one of said barrel and ferrule members being of resilient material;

adjacent skirt portions of circular cross section on the barrel member and the ferrule member for securing the ferrule member against relative axial rotation with respect to the barrel member, the skirt portions having open end portions and being of a size to make a close mating fit one within the other when moved longitudinally toward each other, the one skirt portion having an outer annular surface and a first set of axially opening notches about its periphery, and the other skirt portion having an inner annular surface and being provided with a second set of complementary axially opening notches positioned in opposed relation to said first set of notches, said sets of notches being positioned for interfitting engagement to prevent said relative axial rotation when the one skirt portion is moved longitudinally into the other skirt portion; and

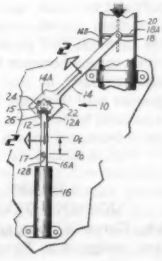
preformed latch means on the inner and outer surfaces of the skirt portions for retaining the sets of complementary notches in interfitting engagement.

4,341,483

ADJUSTABLE CONNECTING APPARATUS

William R. Spencer, Springdale, and Dana D. Freberg, Middletown, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Nov. 24, 1980, Ser. No. 209,363
Int. Cl.[3] F16D 1/00; F16L 25/00
U.S. Cl. 403—4 13 Claims



1. Adjustable connecting apparatus for connecting a movable drive portion of a first relatively fixed position first operting member to a movable driven portion of a relatively fixed position second member which is spaced from the first member, which comprises:

(a) a first connecting link having a pair of axially opposing ends, one of said ends adapted to be coupled to the drive portion;

(b) a second connecting link having a pair of axially opposing ends, one of said ends adapted to be coupled to the driven portion;

(c) coupling means for adjustably coupling said remaining opposing ends of said first and second connecting links, which includes:

(i) a mating plug having at least three sides and having at least one hole disposed eccentrically therethrough and generally parallel to said sides;

(ii) said remaining opposing end of one of said connecting links including a socket therein for lockingly mating with said plug wherein said eccentric hole can be disposed in a plurality of different rotational positions with respect to said socket;

(iii) said remaining opposing end of the other of said connecting links includes an opening therethrough for receiving securing means; and

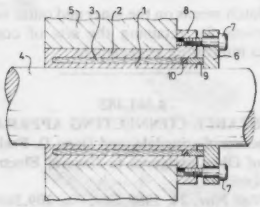
(iv) securing means for passing through said eccentric hole and said opening in said remaining opposing end of the other of said connecting links for operationally securing said first and second connecting links together with said eccentric hole being in one of said plurality of different rotational positions.

4,341,484

HYDRAULICALLY EXPANDABLE FRICTION COUPLING

Börje Peterson, Linköping, and Ulf Lundqvist, Mjölby, both of Sweden, assignors to FFV Industriprodukter AB, Eskilstuna, Sweden

Filed Aug. 29, 1980, Ser. No. 182,586
Claims priority, application Sweden, Aug. 31, 1979, 7907277
Int. Cl.³ F16D *1/08*
U.S. Cl. 403—5 **7 Claims**



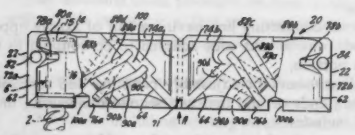
1. A hydraulically expandable friction coupling for coupling a shaft to a hub, in which said coupling comprises concentrically arranged outer and inner cylindrical sleeves introduced between said shaft and said hub, said sleeves sealingly enclosing a pressure medium therebetween, adjusting means for exerting pressure through said pressure medium against the sleeves to transmit a torque between the shaft and the hub, the improvement characterized in that the outer sleeve is so formed with a greater wall thickness than the inner sleeve that initial slipping is ensured between the outer sleeve and said hub when said torque is increased over a predetermined value.

4,341,485

JOINING DEVICE

Robert H. Appleby, Gerrards Cross, and Peter L. Cove, London, both of England, assignors to Titus Tool Company Limited, England

Continuation-in-part of Ser. No. 52,940, Jun. 28, 1979, abandoned. This application Nov. 21, 1979, Ser. No. 96,544
Claims priority, application United Kingdom, Nov. 24, 1978, 46048/78; Oct. 19, 1979, 7936286
Int. Cl.³ F16B *9/02*
U.S. Cl. 403—231 **51 Claims**



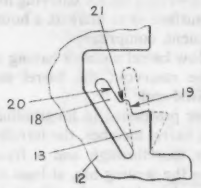
1. A joining device for joining panels, comprising a pin to be secured into one panel, the pin having a head portion, a holding member adapted to be fitted in a recess in the other panel, the holding member comprising a plug-like body portion having an opening for receiving said head portion, and a securing member, the securing member being accessible at that side of the body portion in which said opening lies and being operable while within the body portion to draw said head portion inwardly of the body portion by pressing on said head portion to tighten a joint between panels, the pin being a steel screw having a threaded shank and a head portion of which at least part is substantially symmetrical around the pin axis, the head portion including means engageable by a rotary driving implement and a stop portion located a pre-determined axial distance from said substantially symmetrical part, said stop portion comprising a collar freely rotatable on the screw for limiting the extent to which the pin can be driven into a panel.

4,341,486

LOCKING TAB FOR HOOK-IN TYPE SHELVING

Peter G. Hammerschlag, 220 - 111th Ave. SE., Bellevue, Wash. 98004

Continuation of Ser. No. 815,843, Jul. 14, 1977, Pat. No. 4,157,228. This application May 22, 1979, Ser. No. 41,385
Int. Cl.³ F16B *7/22*
U.S. Cl. 403—252 **2 Claims**



1. A shelving assembly comprising vertical posts of sheet metal or the like having at least one wall with a plurality of slots in said wall spaced from each other along the length of the post; horizontal beams of sheet metal or the like having a web portion and one or more hooks protruding from the ends of the webs, each of these hooks being received in one of the slots in the posts such that said beams extend transversely from said posts with said webs substantially perpendicular to the said walls with slots of the posts; said beam webs having in addition, extending upwards from at least one of the hooks at each end of the beams, locking tabs, these locking tabs being bendable forward into slots of the posts above the hooks, thus preventing the beams from being lifted upward relative to the posts and thus preventing unlocking of the hooks of the beams from the posts, these locking tabs having in addition a secondary tab with a shoulder surface abutting the post when the tab is bent forward into the locked position and a second surface adjoining said abutting surface in an upward direction and tapering away from the post such that the end of a screwdriver can be placed between the said second surface and the post and twisted to bend the tab back into its original position.

4,341,487

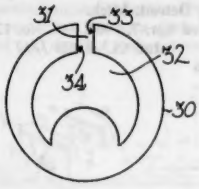
CONNECTOR

Borivoj Nemecek, 100 Kitchener Ave., Kensington, Johannesburg 2094, Transvaal, South Africa

Filed Aug. 16, 1978, Ser. No. 934,264
Int. Cl.³ E04B *1/48*
U.S. Cl. 403—297 **3 Claims**

1. Dowel connector means comprising a body having part-cylindrical inner walls and a cylindrical outer wall coaxial with said inner walls and having a longitudinal slot therethrough extending from end to end thereof so that the opposed faces of the slot in the body are spaced apart, the body being composed of a resilient plastics material so that when it is compressed to bring the said opposed faces together the body is placed in tension tending to separate the said faces, and a part-cylindrical rod member disposed in the body, said rod member being of substantially uniform cross-sectional configuration from end to end thereof and being integral with the body on the side of the

body opposite the slot, the distance between said part-cylindrical inner walls and the exterior of the part-cylindrical rod



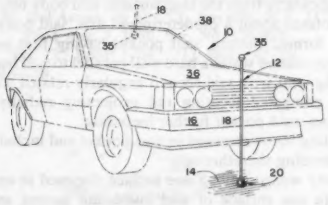
member, in the unstressed condition of the tubular body, being greatest adjacent the slot and progressively decreasing in both directions away from the slot.

4,341,488

GUIDEPOST FOR PARKING VEHICLES

John E. Ryan, Irvine, Calif., assignor to Autopost International, Inc., Reno, Nev.

Filed Jul. 21, 1980, Ser. No. 170,652
Int. Cl.³ E01F *9/00*
U.S. Cl. 404—10 **3 Claims**



1. An improved vehicle-parking guidepost to be positioned in a given vehicle-parking area to aid the driver thereof in correctly positioning a vehicle in said given area, said parking guidepost comprising:

a support base having a central bore therein;

an elongated flexible rod member having one end thereof mounted in said central bore of said support base, and an opposite free end;

an illuminatable housing defining a sphere having an upper transparent body member and a lower body member, said upper body member being removably secured to said lower body member;

a light bulb mounted in said housing wherein the upper transparent member is illuminated thereby;

a battery connected to said light bulb;

a switch means adapted to be activated when said guidepost is angularly tilted from a vertical position by said vehicle to illuminate said light bulb, and wherein said battery and said switch means are contiguously disposed in said illuminatable housing.

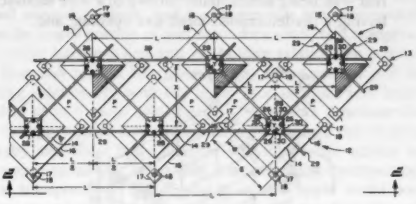
4,341,489

OFFSHORE REEF

Joe Karnas, 4843 Eastlake Rd., Sheffield Lake, Ohio 44054

Filed Apr. 30, 1979, Ser. No. 34,362
Int. Cl.³ E02B *3/06*
U.S. Cl. 405—35 **9 Claims**

1. An offshore reef assembly comprising a substantially vertical support, and a plurality of reef members mounted on said vertical support in stacked fashion, each reef member having a substantially central vertical opening for receiving said vertical support, each of said reef members having side faces which side faces are inclined to the horizontal and vertical to absorb and dissipate the energy of water moving past said reef members, each reef member stacked on said vertical support being arranged so that the inclined side faces of vertically adjacent reef members form laterally facing alternating ribs and grooves of generally horizontally extending V-shape



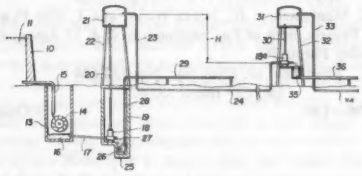
cross section, and a plurality of vertical supports each with reef members stacked thereon arranged in a row, the side faces of the reef members in adjacent stacks being horizontally spaced to allow water to move between and past the side faces of the adjacent stacks of reef members.

4,341,490

SELF-SUSTAINING LAND IRRIGATING AND HYDROELECTRIC POWER GENERATING SYSTEM

Walter W. Keeling, Roanoke and Market Sts., Amsterdam, Va. 24175

Filed Oct. 15, 1980, Ser. No. 197,027
Int. Cl.³ E02B *13/00*
U.S. Cl. 405—36 **10 Claims**



1. An irrigation system comprising at least one substantially inexhaustible water source, a first downstream hydraulic ram receiving water from said source under pressure due to an effective head between the source and said first hydraulic ram, a first elevated storage tank receiving water from said first hydraulic ram and having an overflow pipe, a first irrigation pipe near said first hydraulic ram and elevated tank, an externally powered pump delivering exhaust water from the first hydraulic ram to the first irrigation pipe, at least a second downstream hydraulic ram and second elevated storage tank receiving water from the second hydraulic ram and having an overflow pipe, a second irrigation pipe receiving water by gravity flow discharged by the second hydraulic ram, and a supply pipe for the second hydraulic ram connected therewith and connected with the first-named overflow pipe, there being an effective head between the water level in the first elevated storage tank and the inlet of the second downstream hydraulic ram.

4,341,491

EARTH RETAINING SYSTEM

Albert Neumann, 5401 Graywing Ct., Columbia, Md. 21044

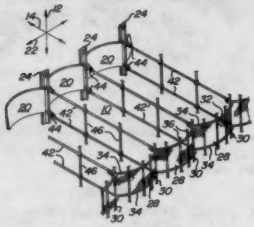
Filed May 7, 1976, Ser. No. 684,371
Int. Cl.³ E02D *17/20*
U.S. Cl. 405—258 **27 Claims**

1. A tension loaded earth retaining system comprising:

(a) a solid continuous frontal wall extending linearly in a

substantially vertical direction, said frontal wall having an arcuate contour in a horizontal plane;

(b) a rear wall longitudinally aligned in a continuous manner and displaced from said frontal wall, said rear wall extending substantially linearly in said vertical direction and having an arcuate contour in said horizontal plane, said rear wall being substantially formed of a wire mesh screen having a predetermined mesh size opening; and,



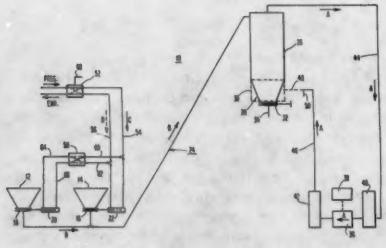
(c) tension load distribution means extending in said horizontal plane and said longitudinal direction, said tension load distribution means fixedly secured to said frontal wall and said rear wall on opposing transverse ends thereof, said arcuate contours of said frontal wall and said rear wall being substantially arcuately similar for distributing force loads throughout each of said walls.

4,341,492

METHOD FOR PNEUMATICALLY HANDLING AGGLOMERATIVE MATERIALS

William G. Montgomery, Jr., North Wales, and T. Eric Pynor, King of Prussia, both of Pa., assignors to R & M Associates, Inc., Valley Forge, Pa.

Filed Feb. 19, 1980, Ser. No. 122,624
Int. Cl.³ B65G *53/40*
U.S. Cl. 406—130 **9 Claims**



1. A method for handling agglomerative material comprising the steps of:

(a) providing hopper means for accepting said material;

(b) providing receiver means for accumulating said material, said receiver means including a lower portion which tapers down to a discharge aperture in the bottom thereof;

(c) providing fluid communication means between said hopper means and said receiver means;

(d) pneumatically conveying said material from said hopper means to said receiver means through said fluid communication means;

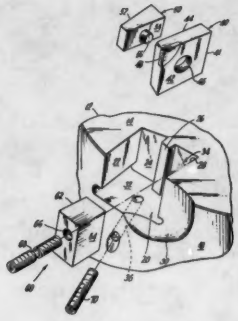
(e) expediting discharge of said accumulated material through said discharge aperture comprising the step of drawing air into said receiver means from the ambient atmosphere external to said receiver means through said discharge aperture for a predetermined period of time.

4,341,493

ADJUSTABLE CLAMPING WEDGE SYSTEM FOR CUTTING INSERT OF A MILLING CUTTER

Donald S. Erkfritz, Clarkston, Mich., assignor to General Electric Company, Detroit, Mich.

Filed Apr. 7, 1980, Ser. No. 137,995
Int. Cl.³ B26D *1/12*
U.S. Cl. 407—36 **10 Claims**



5. A cutting tool having a cylindrical body, with a substantially planar base surface and an annular side surface extending perpendicularly from the base surface, said body being adapted to be rotated about a predetermined axis, said body having a pocket formed therein, said pocket having first and second angularly related walls, a base wall parallel to said base surface, a leading wall with said second angularly related wall including an elongated locating rail projecting radially outward therefrom, said pocket further including:

a cutting insert disposed in said pocket and including a hole extending therethrough,

a safety wedge having one surface disposed in engagement with one surface of said insert and having an opposed planar surface disposed in engagement with said first wall, said safety wedge including a projection extending through said hole in said cutting insert,

a wedge assembly having a wedge surface for engagement with the opposed face of said cutting insert and a substantially radially extending locking screw threadably connected between said body and said wedge assembly, said locking screw being selectively operable to shift said wedge assembly into wedging engagement with said cutting insert and said leading wall whereby said cutting insert is clamped intermediate said safety wedge and said wedge assembly with the edge of said cutting insert abutting said locating rail such that the respective wedge assemblies on opposite sides of said cutting insert protect the body of the milling cutter from chip-erosion and damage, and

an adjustable screw threadably connected to the cutter body and extending from said annular side surface of said body to said base wall of said pocket, said adjustable screw being in engagement with a second edge of the cutting insert, said adjustable screw for altering the position of the cuting insert in a direction within the plane of said cutting insert.

4,341,494

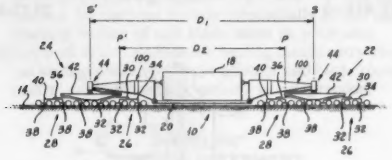
VARIABLE-LENGTH REDUCED PIVOT FOR RAILWAY CAR

Franco Fedele, Florence, Italy, assignor to Norca Corporation, Great Neck, N.Y.

Filed Feb. 13, 1980, Ser. No. 121,021
Int. Cl.³ B61D *3/16*
U.S. Cl. 410—45 **7 Claims**

1. An assembly for supporting a load for movement along a

way including in combination a truck having wheels adapted to move along said way, a member for receiving said load on a load support center, means for supporting said member on said truck for lateral movement relative to said way, said truck and said member having longitudinal center lines, a plurality of sensors disposed at respective locations along the longitudinal center line of one of said member and said truck spaced from



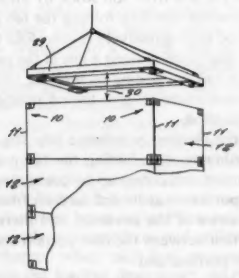
said load support center, each of said sensors being operable to sense the lateral displacement of an adjacent portion disposed along the center line of the other of said member and said truck, means adapted to be actuated to shift said member laterally relative to said truck, and means responsive to a selected one of said sensors for actuating said lateral shifting means to shift said member in such a direction as to reduce the lateral displacement sensed by said sensor.

4,341,495

CONTAINER CORNER POST LOCKING ASSEMBLY

Raymond M. Del'Acqua, 26 Evy Ct., Sayville, N.Y. 11782

Filed Aug. 7, 1980, Ser. No. 176,057
Int. Cl.³ B60P *1/64, 7/13;* B61D *45/00*
U.S. Cl. 410—78 **1 Claim**



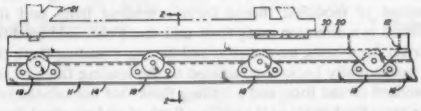
1. A container corner post locking assembly for a cargo container comprising a hollow metal box affixed at the upper and lower ends of each corner of said container; an activating unit extending downward from each said upper end metal box; and a bottom twist lock and shear pin unit extending upwardly from each said lower end metal box and connected to said activating unit; each said activating unit comprising a saddle having an open upwardly facing reception well, said saddle being positioned within an upper metal box, an elongated shaft extending downwardly from the bottom surface of said saddle, and said elongated shaft having an end remote from said saddle and having a first and second flat wing plate extending in opposite directions from said remote end of said elongated shaft; each said bottom twist lock and shear pin unit comprising a secondary shaft having a greater diameter than said elongated shaft of said activating unit, said secondary shaft having an upper end having a hollow opening formed therein for receiving therein said remote end of said elongated shaft, said upper end of said secondary shaft further having a pair of oppositely disposed slots in which slide said first and second flat plate wings to form a shearable vertical unitary shaft for movement of said secondary shaft relative to said elongated shaft, an elongated shear body member having an aperture formed therethrough, said secondary shaft having a lower end inserted through said aperture of said shear body member such that said lower end of said secondary shaft extends below the bottom face of said shear body member, and a rectangularly-shaped latch member affixed to said lower end of said secondary shaft, said latch member and said shear body member moving together along with the movement of said lower end of said secondary shaft, and a compression spring mounted about the lower portion of said secondary shaft, said compression spring having a first end in abutting relationship against said first and second flat plate wings, and a second end in abutting relationship with the upper face of said shear body member so as to urge said shear body member downwardly into the upper metal box of a container positioned therebelow whereby said shear body member will shear after seating in said upper metal box when said containers are separated by lateral transportation forces; and each said upper metal box having an enlarged opening formed in the top face thereof through which said saddle and therefore said elongated shaft is rotated by a container handling spreader and through which said latch member and said shear body member extend when pushed downwardly therein; each said lower metal box having an enlarged opening in the bottom face thereof, which enlarged opening of said lower metal box is of the same size and shape as said enlarged opening of said upper metal box to provide a mating relationship between a lower and upper enlarged opening to form a continuous passageway therebetween; said shear body member having a peripheral edge flange of greater dimensions than said enlarged opening of said upper metal box whereby said shear body member rests upon lower face of said lower metal box above said enlarged opening of said lower metal box to prevent passage of said shear body member through said enlarged openings, said shear body member having a rectangular cross-sectional shape and positioned on said secondary shaft parallel with respect to said saddle; each said enlarged opening of said upper and lower metal boxes having a size greater than said rectangular cross-sectional shear body member so that said shear body member extends downwardly in said enlarged openings to expose said latch member within said lower metal box, said latch member locking said containers together upon rotation of said elongated and secondary shafts through a right angle, said latch member having a rectangular-shaped cross-section such that the longer dimension is greater than the longer dimension of said shear body member to lock said containers together.

4,341,496

SEAT PALLET LOCK

Gary J. Carpenter, and Gabor L. Radi, both of Jamestown, N. Dak., assignors to Western Gear Corporation, Lynwood, Calif.

Filed Nov. 23, 1979, Ser. No. 96,656
Int. Cl.³ B60P *1/64, 7/06;* B63B *25/24*
U.S. Cl. 410—79 **10 Claims**



1. A pallet lock adapted to be carried by a pallet and which lock is selectively operable to engage an elongated latch member comprising,

a pair of elongated support means adapted to be supported by such a pallet on opposite lateral sides of such a latch member and extending generally parallel thereto;

elongated arm means pivotably supported at one end thereof by said support means, respectively;

biasing means operationally carried by said support means and cooperable with said arm means, respectively, for biasing

said arm means to a first position whereat said arm means extend generally laterally of said support means;

said arm means being of a length and having the other ends thereof of a configuration to captively encompass such a latch member upon pivotable movement of said arm means from said first position to a second position;

actuator means movably supported by at least one of said support means in engagement with said arm means, said actuator means being movable to move said arm means into said second position;

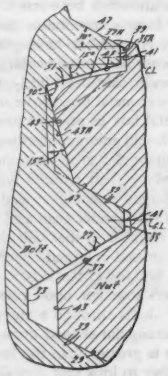
and selectively operable retaining means carried by said actuator means and adapted to engage such a pallet to retain said actuator means in engagement with said arm means when said arm means are in said second position.

4,341,497

PREVAILING TORQUE BOLT

Gerald P. Downey, Sterling Heights, and Arthur J. McKewan, Rochester, both of Mich., assignors to Microdot Inc., Darien, Conn.

Filed Apr. 2, 1980, Ser. No. 136,696
Int. Cl.³ F16B *39/30*
U.S. Cl. 411—311 **5 Claims**



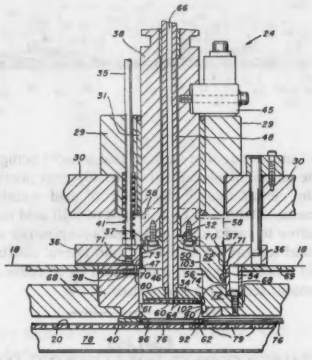
1. In a threaded fastener, a shank having an end adapted to enter a tapped hole containing a uniform internal helical thread of a standard thread form, said shank having an external helical thread thereon of uniform pitch extending along the length of the shank to said end, said external thread comprising helical leading and trailing flanks, a helical root, and a helical crest, said external thread having a first portion of standard thread form extending to said end and adapted for free running assembly in said internal thread, said external thread having a second portion of modified thread form extending from said first portion in a direction away from said shank end, said modified thread form being asymmetric and having a leading flank that is substantially backset compared to the leading flank of said standard thread form and a trailing flank that has substantially the same flank angle as the trailing flank of said standard thread form, said modified thread form having a root that is substantially larger in diameter and in length than the root of the standard thread form and inclined to converge in a direction extending away from said shank end on an angle of substantially 15° to the axis of the shank, said backset leading flank and said inclined root defining and providing a clearance space to accept the portion of the standard internal thread that is caused to elastically and plastically move upon assembly of said internal thread with said modified thread portion due to swaging of the internal thread by the substantially enlarged and inclined root of said modified thread form.

4,341,498

METHOD AND APPARATUS FOR BLANKING, FOLDING AND INSERTING MEMBRANE INTO CONTAINER COVERCAP

Darwin L. Ellis, Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 23, 1980, Ser. No. 162,149
Int. Cl.³ B21D *51/46*
U.S. Cl. 413—3 **20 Claims**



1. A method of making a closure assembly having a foil membrane and covercap suitable for induction heat sealing the membrane about a container mouth, the method comprises:

(a) providing a membrane having a disc portion and an integral tab portion from foil stock by initiating blanking of the tab portion and then folding the tab portion as it is being blanked to progressively reverse fold the tab portion toward the disc portion along a line at the periphery of the disc portion and continuing to fold the tab portion to at least an intermediate reverse folded position as the disc portion is blanked;

(b) inserting the blanked membrane into the covercap and thereby further reverse folding the tab portion between the disc portion and covercap by contacting the partially folded tab portion near its end farthest from the fold line with the interior of the covercap and thereafter pressing the tab portion between the disc portion and covercap to fold the tab portion; and

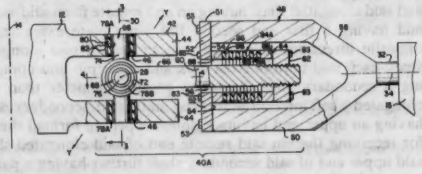
(c) said blanking and inserting of the membrane being accomplished in one continuous axial stroke.

4,341,499

BLADE RETENTION SYSTEM

Robert R. Peterson, Hudson, Mass., assignor to Barry Wright Corporation, Newton, Mass.

Filed Mar. 24, 1980, Ser. No. 133,015
Int. Cl.³ B64C *27/38*
U.S. Cl. 416—134 A **21 Claims**



1. In a fully articulated rotor head of a rotary wing aircraft of the type including a rotor head rotatable about a central axis and at least one blade, an improved rotor blade retention sys-

tem for coupling said head to said blade, said system comprising:

retention means comprising (1) elastomeric flap bearing for carrying in shear substantially all and only the flapping motion of said blade about its flapping axis, (2) elastomeric lead-lag bearing, separate from said flap bearing means, for carrying in shear substantially all and only the lead-lag motion of said blade about its lead-lag axis, and (3) elastomeric pitch bearing, separate from said flap and lead-lag bearing, for carrying in shear substantially all and only the pitching motion of said blade about its pitch axis;

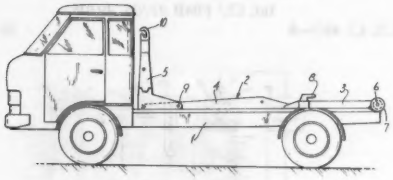
wherein all of said elastomeric bearing means carry centrifugal loads provided by the rotation of said blade about said central axis substantially entirely in compression.

4,341,500

LOADING EQUIPMENT

Heikki Laitinen, Raisio, Finland, assignor to Oy Partek Ab, Finland

Filed May 12, 1980, Ser. No. 148,588
Claims priority, application Finland, Apr. 11, 1980, 801153
Int. Cl.³ B60P *1/64*
U.S. Cl. 414—498 **2 Claims**



1. An exchange platform system suitable for alternatively loading an exchange platform having either of two different platform frame widths onto a vehicle and for unloading the exchange platform from the vehicle, comprising:

a first exchange platform having a pair of frame beams spaced apart a first distance;

a second exchange platform having a pair of frame beams spaced apart a second distance than said first distance;

an exchange platform device adapted to be mounted on a vehicle and including a pair of rollers near one end thereof, said rollers each having a width and being spaced such that the frame beams of said first exchange platform are respectively supported on said rollers on the outer portions thereof when said first exchange platform is loaded onto the loading device and the frame beams of said second exchange platform are respectively supported on the inner portions of said rollers when said second exchange platform is loaded onto the loading device; and

locking means on said loading device for automatically securing an exchange platform onto the loading device, said locking means being located in planes perpendicular to the longitudinal axes of said rollers approximately at the respective centers thereof such that said locking means are located between the frame beams of said first exchange platform when it is loaded on the loading device and outside the frame beams of said second exchange platform when it is loaded on the loading device.

4,341,501

HYDRAULIC CONTROL VALVE CIRCUIT FOR A SWING MECHANISM

Herman J. Maurer, and Carl O. Pedersen, both of Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Aug. 22, 1980, Ser. No. 180,311
Int. Cl.³ B66F *9/22*; F15B *11/20, 13/06*
U.S. Cl. 414—694 **9 Claims**

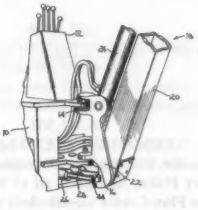
1. In an implement having a support stand attached to a tractor having a hydraulic system, and a swing tower pivotally connected to said support stand about a vertical axis and supporting a boom, apparatus for rotating said boom laterally from one side to the other side of said tractor, comprising:

(a) two hydraulic motors pivotally interconnected between the support stand and the swing tower, each of said motors having a cylinder end and a piston rod end, the cylinder ends being pivotally connected to said support stand and the piston rod ends pivotally connected to the swing tower by a pivotal connection parallel to and spaced from the pivotal connection of the swing tower to the support stand, the rectilinear expansion and contraction of said motors inducing rotational movement to said swing tower about its pivotal axis on the support stand;

(b) a source of fluid pressure;

(c) a drain reservoir;

(d) directional flow control means for selectively delivering a flow of fluid under pressure from the source of fluid



pressure to the piston rod end of one of said two hydraulic motors and for connecting the piston rod end of the other hydraulic motor to the drain reservoir; and

(e) sequencing valve means operationally associated with the rotational position of said swing tower, for sequentially connecting both of said cylinder ends to the source of fluid pressure; then connecting the cylinder end of said one hydraulic motor to the drain reservoir while connecting the cylinder end of the other hydraulic motor to the source of fluid pressure; and then connecting both of said cylinder ends to the drain reservoir,

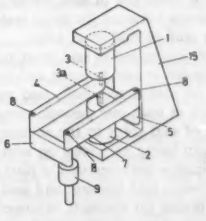
whereby said boom is rotated by: first by the other of said two hydraulic motors developing its maximum output force while said one hydraulic motor develops a reduced output force; then by both of said two hydraulic motors; and then by said one hydraulic motor with the other of said two hydraulic motors isolated from high pressure fluid.

4,341,502

ASSEMBLY ROBOT

Hiroshi Makino, 1013 Haguro-cho, Kofu City, Yamanashi Prefecture, Japan

Filed Mar. 24, 1980, Ser. No. 133,287
Claims priority, application Japan, Oct. 12, 1979, 54-131983
Int. Cl.³ B25J *13/00, 1/12*; G05G *11/00*
U.S. Cl. 414—744 R **7 Claims**



1. An assembly robot comprising:

a link mechanism formed of four links and movable in a horizontal plane, a first said link being pivotally connected to a second said link about a first vertical axis, said second said link being pivotally connected to a third said link about a second vertical axis, and said third link being pivotally connected to a fourth said link about a third vertical axis;

a base;

a first motor mounted on said base and having a vertical shaft fixed to said first link;

a second motor mounted on said base and having a vertical shaft fixed to said fourth link;

said shafts of said first and second motors being vertically concentrically aligned; and

an assembly tool mounted on said second vertical axis, whereby operation of said first and second motors rotates said first and fourth links about the axes of said motor shafts and thereby causes said link mechanism to move horizontally the position of said assembly tool.

4,341,503

PUMP FOR FLUID MEDIA

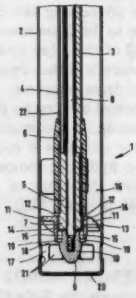
Alois Gschwender, Reichenbach; Wolfgang Renner, Maulbronn, and Herbert Hahn, Stuttgart, all of Fed. Rep. of Germany, assignors to Flux-Geräte Gesellschaft mit beschränkter Haftung, Stuttgart, Fed. Rep. of Germany

Filed Apr. 14, 1980, Ser. No. 140,413

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915379

Int. Cl.³ F04D *29/10*

U.S. Cl. 415—112 **1 Claim**



1. A pump apparatus for fluid media, which comprises:

a housing;

an inner tube arranged in said housing in such a way that space remains between the inner wall of said housing and the outer wall of said inner tube;

a drive shaft journalled in said inner tube;

a rotor arranged in said housing and including a main body fastened on said drive shaft, said main body being provided with at least one passage extending from the pressure side of said rotor to the suction side thereof, with a suction gap being provided on said inner tube to allow communication between said at least one passage and said space between said housing and said inner tube;

conveying blades for medium, arranged on said main body;

a pump arranged on said rotor and operating counter to the transporting direction of said conveying blades, the pressure side of said rotor including a bore in said main body, and said inner tube including a guide bearing, one end of which is arranged in said bore, a gap serving as a suction-gap extension being provided between said guide bearing and the wall of said bore to effect said communication between said suction gap and said at least one passage, said at least one passage being arranged in the plane of said suction-gap extension, and being connected to said pump, said guide bearing being formed by that end of said inner tube directed toward said rotor, a tube sleeve around at least a portion of said inner tube, and a support sleeve in which said guide bearing is arranged, said support sleeve extending over a portion of said tube sleeve.

4,341,504

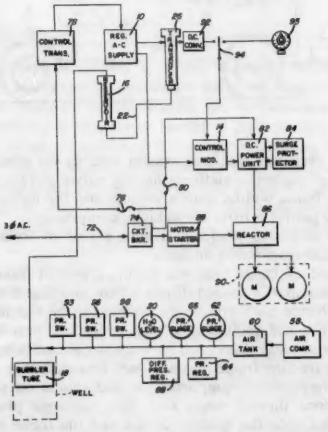
PUMP CONTROL SYSTEM

Frank A. Hignutt, 602 "E" St., Millville, N.J. 08332; Robert F. Hignutt, 26 Greenbriar Rd., Turnersville, N.J. 08012, and Kenneth W. Hignutt, 36 Porreca Dr., Millville, N.J. 08332

Filed Dec. 6, 1979, Ser. No. 101,009

Int. Cl.³ F04B *41/06, 49/06*

U.S. Cl. 417—8 **10 Claims**



1. A pump system for maintaining a flow of fluid through a well comprising:

a pair of terminals for connection to a power supply;

pump means connected to said terminals of said power supply for pumping fluid from said wet well;

motor means connected to said pump means for driving said pump means, said motor means comprising a variable speed electric motor;

liquid level sensing means disposed in said wet well for providing an output proportional to the level of fluid in said wet well; and

control circuit means for receiving said output of said liquid level sensing means and controlling the speed of said motor in response thereto,

said control circuit means including reactor means connected to said terminals of said power supply and said motor means, said motor means further including a second motor and said pump means including two pumps one of which is connected to said first mentioned motor, the other of which is connected to said second motor, said control circuit means further includes means for operating

said second motor at constant full speed in response to the output from said liquid level sensing means reaching a predetermined level, whereby the first mentioned motor only is operative at a variable speed until the pump connected thereto reaches the maximum capacity at which point the second motor is operated at a constant full speed with the first mentioned motor then being operated at variable speed in response to the output of the liquid level sensing means.

4,341,505

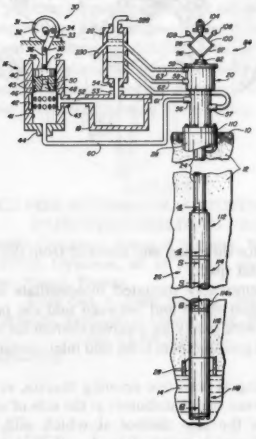
SONIC PRESSURE WAVE PUMP FOR LOW PRODUCTION WELLS

Arthur P. Bentley, P.O. Box 1952, Roswell, N. Mex. 88201

Continuation-in-part of Ser. No. 958,552, Nov. 8, 1978, Pat. No. 4,295,799. This application Jun. 19, 1980, Ser. No. 160,934

Int. Cl.³ F04F *7/00;* **F04B** *9/10, 35/02*

U.S. Cl. 417—240 **14 Claims**



1. A sonic pressure wave surface operated pump for use in pumping liquid from low production wells and having a column of liquid therein, said pump comprising:

(a) a sonic pressure wave generator having a reciprocally operable piston for cyclically impacting the column of liquid;

(b) a metallic production tube coupled to said generator and extending downwardly toward the liquid to be pumped;

(c) said piston of said generator having a central recess formed in its liquid impacting face for generating the sonic pressure waves which move downwardly along the inner walls of said production tube;

(d) a liquid discharge unit interposed between said generator and said production tube and having a liquid output port, said liquid discharge unit having means responsive to an increase in hydrostatic pressure in the liquid column for movement form a first position in which said output port is closed and a second position in which said output port is open;

(e) biasing means for yieldingly urging said liquid discharge unit to its first state; and

(f) a subterranean pumping assembly on the depending end of said production tube and in communication with the liquid to be pumped, said assembly having means for impingly receiving the downwardly moving sonic pressure waves and reflecting them upwardly through the center of said production tube and responding to the impinging sonic pressure waves by intaking the liquid to be pumped and building its hydrostatic pressure to a point where it will move said liquid discharge unit to its second position to allow the reflected sonic pressure waves to carry the intaken liquid upwardly therewith.

4,341,506

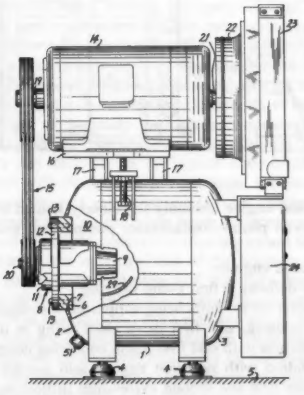
APPARATUS FOR THE GENERATION OF COMPRESSED AIR

Rüdiger Klein, Dorsten, Fed. Rep. of Germany, assignor to Gutehoffnungshütte Sterkrade A.G., Oberhausen, Fed. Rep. of Germany

Filed Aug. 14, 1979, Ser. No. 66,547

Int. Cl.³ F04B *35/04;* **F01M** *1/00*

U.S. Cl. 417—362 **4 Claims**

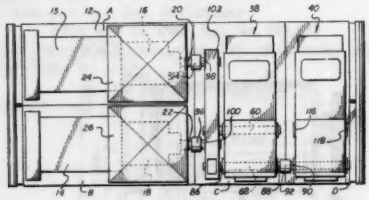


1. In apparatus for the generation of compressed air including compressor means, motor means for driving said compressor means, supply means providing liquid lubricant for cooling said compressor means, storage container means for said liquid lubricant, means for separating said lubricant from compressed air, means for cooling said separated lubricant the control means for controlling and regulating the operating parameters of said apparatus in generating said compressed air, the improvements which comprise: that said storage container means is constructed as a pressure vessel for receiving and collecting said lubricant; that said compressor means includes a high-pressure-conducting housing section and is built into said pressure vessel in a pressure-tight manner at least to the extend of said high-pressure-conducting housing section, with said compressor means comprising air intake means through which air is supplied to said pressure vessel; and that said motor means, said lubricant cooling means and said control means are located on the exterior of said pressure vessel and mounted in proximity thereto; said motor means being mounted on the top of said pressure vessel and being connected to said compressor

means through a V-belt drive mechanism; said motor means including a first power take off pin connected with said V-belt drive and a second power take off pin coupled to a fan which is operably arranged as part of said means for cooling said separated lubricant.

4,341,507
Patent Not Issued For This Number

4,341,508
PUMP AND ENGINE ASSEMBLY
Leroy M. Rambin, Jr., Houston, Tex., assignor to The Ellis Williams Company, Houston, Tex.
Filed May 31, 1979, Ser. No. 44,172
Int. Cl.³ F04B *23/06*
U.S. Cl. 417—426 **23 Claims**



1. A pump and engine assembly for closely spaced engines and rotary driven piston displacement pumps, said assembly comprising:

first and second engines;

a first pump defining a first pump housing;

first and second drive shafts being supported for rotation by said first housing, said first drive shaft being in driving interconnection with said first pump and being coupled in driven relation with said first engine, said second drive shaft having first and second extremities projecting from opposed sides of said first housing, said first extremity of said second drive shaft being coupled in driven relation with said second engine;

a second pump defining a second pump housing; and

a second pump drive shaft being mounted for rotation by said second pump housing and being coupled in driving relation with said second pump, said second pump drive shaft being coupled in driven relationship with said second drive shaft of said first pump.

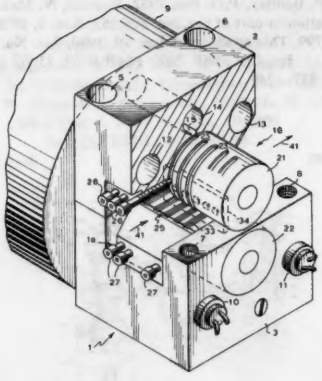
4,341,509
CROSSHEAD EXTRUSION DIE
Norman R. Harlow, Cornwall-on-the-Hudson, N.Y., assignor to Carlisle Corporation, Buchanan, N.Y.
Filed Jun. 8, 1979, Ser. No. 46,927
Int. Cl.³ B29F *3/10*
U.S. Cl. 425—114 **8 Claims**

1. A die assembly for the extrusion of a covering of a thermoextrudable material over a plurality of bare or covered wires, said assembly comprising:

a two-part die body having an inlet opening at one side thereof and an outlet opening at another side thereof, each part having a manifold for receiving said material;

a pair of distributors removably received between the die body parts, one adjacent the manifold of one said part and the other adjacent the manifold of the other said part, said distributors also being adjacent each other and spaced apart to define a space therebetween intermediate said inlet opening and said outlet opening,

and each said distributor having at least one peripheral flow channel in communication with the manifold adjacent thereto and extending from the manifold adjacent thereto



to said space for directing said material from the adjacent manifold to said space;

a wire guide removably mounted intermediate said inlet opening and said space and between said die parts, said guide having wire receiving grooves therein for receiving said wires and guiding them from said inlet opening to said space; and

a die plate, having at least one opening therein, removably mounted between said distributors at the side of said space opposite from the side thereof at which said guide is mounted with said opening aligned with said groove in said guide.

4,341,510
MULTIPLE PRESS FOR CERAMIC MOLDINGS
Hans-Henning Croseck, Konz, and Rolf Jung, Trier, both of Fed. Rep. of Germany, assignors to Laeis-Werke AG, Trier, Fed. Rep. of Germany
Filed Aug. 13, 1980, Ser. No. 177,830
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1979, 2935156
Int. Cl.³ B29C *1/14*; B28B *3/06*
U.S. Cl. 425—149 **5 Claims**

1. A multiple press having molding means for forming ceramic moldings, comprising in combination:

a base frame

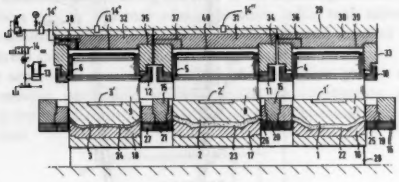
a movable mounting plate operatively mounted in said base frame and carrying a plurality of mold halves therein;

a fixed mounting plate operatively mounted in said base

frame opposite said movable mounting plate and having a plurality of cavities;

a plurality of punch carriers slidably mounted in said cavities, each punch carrier having a punch which has a mold half which mates with a mold half on said movable mounting plate, as to form a pair of confronting mold halves;

each cavity of said plurality of cavities having a bottom wall and the corresponding punch carrier having a confronting rear wall, said bottom wall and confronting rear wall forming a pressure medium receiving chamber therebetween;



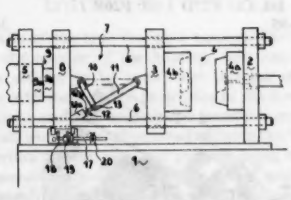
a source of pressure medium; and conduit means connecting each receiving chamber to said source and during the pressing operation to each other; and wherein said plurality of punches of said carriers have different diameters and corresponding filler rings to permit using punches of different diameters on different ones of said carriers, and means for regulating pressure on said punches to provide the same maximum specific pressure for the mold halves on said movable mounting plate during molding.

4,341,511

DEVICE FOR AUTOMATIC ADJUSTMENT OF AN INJECTION MOLDING PRESS

Jean Laurent, Oyonnax; Bernard Monnet, Bellignat, and Philippe Pertuis, Oyonnax, all of France, assignors to Pont-a-Mousson, Nancy, France

Filed Oct. 8, 1980, Ser. No. 195,167
Claims priority, application France, Oct. 10, 1979, 79 25727
Int. Cl.³ B29F *1/06*
U.S. Cl. 425—150 **7 Claims**



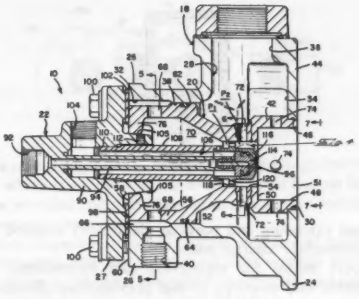
1. An automatic adjustment device for a movement and locking mechanism of an injection molding press including a support base (1), a fixed plate (5) mounted on the base, a first movable half mold bearing plate (3), and a second intermediate movable plate (8), connected to the fixed plate by a locking jack (9) and to the first movable plate by a rapid movement linkage (10–13), the improvement comprising two spaced contactors (15, 16) mounted to the second plate for controlling the extension and retraction of the locking jack, and contactor engagement means disposed between the contactors, said contactor engagement means being frictionally and slidably mounted on said base at a position to be pressed upon by said contactors during movement of said second plate, wherein said contact engagement means is automatically slidably moved to an operative position by movement of said second plate.

4,341,512

BURNER

Raymond J. Wojcieson, Annville; Fred L. Fuhrman, Jonestown, and John J. O'Hara, Annville, all of Pa., assignors to Hauck Manufacturing Company, Lebanon, Pa.

Filed Jul. 31, 1980, Ser. No. 174,129
Int. Cl.³ F23Q *9/00*; B05B *1/00*
U.S. Cl. 431—284 **14 Claims**



1. A combination gas and oil fired burner comprising a hollow body having a downstream end wall with a downstream opening therein, an upstream end with an upstream opening therein aligned with the downstream opening, a gas inlet port extending through the body adjacent the upstream opening, and a secondary air inlet port extending through the body adjacent the downstream opening; a hollow open-ended nozzle extending between said openings within the interior of the body and having a downstream end opening into the downstream opening to communicate the interior of the nozzle with the exterior of the body through such opening, an upstream end adjacent the body upstream end, a gas flow opening through the thickness of the nozzle communicating the gas inlet port with the interior of the nozzle, the nozzle including a reduced interior cross section portion adjacent the nozzle downstream end; an end plate having a primary air inlet port and an oil inlet port; removable securing means for holding the end plate on the upstream end of the body to sandwich the nozzle between the end plate and the body downstream end wall; an oil passage within the nozzle interior extending downstream from the oil inlet port; a primary air passage within the nozzle interior extending downstream from the primary air inlet port; and an atomizing assembly on the downstream ends of said passages and within the reduced interior cross section portion of the nozzle, a gas flow opening in said portion extending past the atomizing assembly to communicate the interior of the nozzle with the exterior of the body through the downstream body opening, and a secondary air flow opening through the nozzle downstream of the gas flow opening at the atomizing assembly to communicate the secondary air inlet port with the downstream end of the nozzle.

4,341,513

SUBMINIATURE PHOTOFLASH LAMP HAVING LIGHT-EMITTING PYROTECHNIC CHARGE

John A. Scholz, Danvers, and George J. English, Reading, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 5, 1980, Ser. No. 146,574
Int. Cl.³ F21K *5/02*
U.S. Cl. 431—362 **13 Claims**

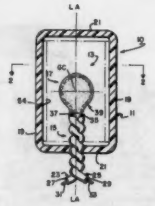
1. A subminiature photoflash lamp comprising:

a light-transmitting envelope;

a pyrotechnic charge located within said envelope at a preestablished distance from the internal surfaces of the walls of said envelope for emitting light through said walls upon

ignition thereof, said pyrotechnic charge including a primer composition and a fuel mixture in physical contact with said primer composition;

ignition means for electrically igniting said pyrotechnic charge including first and second electrical conductors secured within said envelope, each of said conductors having an end portion extending within said envelope,



said extending end portions electrically coupled to said pyrotechnic charge; and

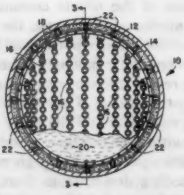
support means for supporting said pyrotechnic charge within said envelope at said prestablished distance from said internal surfaces, said support means located on said extending end portions of said electrical conductors or forming a part thereof, said lamp not including combustible shred material within said light-transmitting envelope.

4,341,514

STANDOFF FOR TWO COMPONENT LINING AND METHOD OF INSTALLATION

Douglas G. Shanks, P.O. Box 1195, Dunedin, Fla. 33528

Filed Nov. 25, 1980, Ser. No. 210,415
Int. Cl.³ F27D *1/16*
U.S. Cl. 432—3 **12 Claims**



12. The method of applying a two component lining to the inside shell of a kiln, comprising the steps of:

welding a plurality of elongated standoffs to the inside shell of the kiln to form a substantially parallel array of the elongated standoffs extending the entire length of the kiln;

applying a first castable material having high insulative properties to the inside shell of the kiln to a thickness insufficient to cover the plurality of elongated standoffs;

welding a grid to the exposed portions of the plurality of elongated standoffs; and

applying a second castable material having a high resistance to abrasion upon the first castable material to a thickness commensurate with the level of the grid.

4,341,515

HIGH TURNDOWN RATIO FLUIDIZED BED REACTOR AND METHOD OF OPERATING THE REACTOR

Jakob Korenberg, York, Pa., assignor to York-Shipley, Inc., York, Pa.

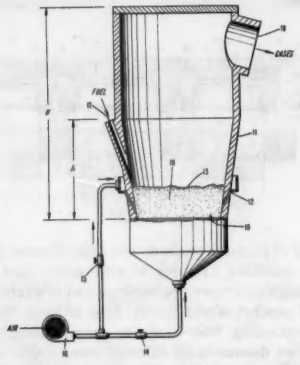
Filed Feb. 11, 1981, Ser. No. 233,507
Int. Cl.³ F21B *15/10*
U.S. Cl. 432—15 **8 Claims**

1. A method of operating an adiabatic fluidized bed reactor that utilizes a bed of granular material for combusting non-uniform particulate matter comprising:

providing an adiabatic fluidized bed reactor having reactor walls terminating in a support surface that supports a bed of granular material;

feeding non-uniform particulate matter to said reactor;

supplying pressurized air to said reactor in excess of the stoichiometric amount needed for combustion both through openings located in said support surface and



through openings located in said reactor walls having outlets below the surface of said bed of granular material, wherein said supplying pressurized air is independent of said feeding non-uniform particulate matter; and

adjusting the flow of pressurized air to said reactor by:

(a) reducing the flow of pressurized air to said reactor wall openings, and

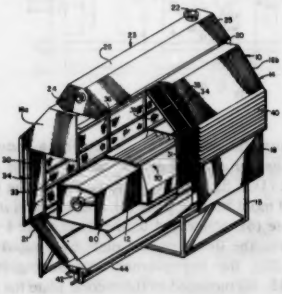
(b) reducing the flow of pressurized air to said support surface openings only after the flow of pressurized air to said reactor wall openings has been reduced to zero.

4,341,516

GRAIN DRYER WITH HEAT EXCHANGE ASSEMBLY

H. H. Eikerman, Kerney, Nebr., and Joseph L. Naylor, Norman, Okla., assignors to Blount, Inc., Montgomery, Ala.

Filed May 18, 1981, Ser. No. 264,348
Int. Cl.³ F27D *1/08*; F26B *17/12*
U.S. Cl. 432—95 **38 Claims**



1. An apparatus for drying granular material comprising:

(a) a housing;

(b) means defining a granular-material conduit for conducting said granular material through said housing;

(c) heat exchange means having at least one generally tubular radiator element;

(d) means for producing a flow of hot combustion gas through the interior of said tubular radiator element to transfer heat from said hot combustion gas to said tubular radiator element, said combustion gas being discharged from the interior of said tubular radiator element at a reduced temperature;

(e) gas conducting means communicating with said tubular radiator element for directing the flow of discharged combustion gas from said tubular radiator element into external communication with said tubular radiator element to increase the temperature of the discharged combustion gas;

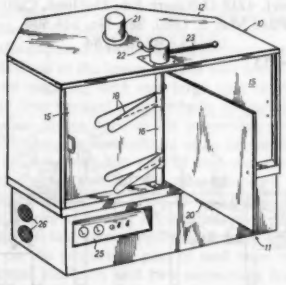
(f) means for introducing the flow of the discharged combustion gas in external communication with said tubular radiator element into said granular-material conduit to treat said granular material therein; and

(g) separation means in the flow of combustion gas for removing particulate material from the combustion gas prior to its introduction into said granular-material conduit.

4,341,517
CURING KILN

Mervyn Gittins-Thomas, 4, The Points, Cox-Green, Maidenhead, Berkshire, England

Filed Oct. 7, 1980, Ser. No. 195,067
Claims priority, application United Kingdom, Aug. 19, 1980, 8027032
Int. Cl.³ F27B *9/16*; F27D *3/12*; F26B *25/00*
U.S. Cl. 432—141 **1 Claim**



1. A kiln of the type having a housing, heating means for heating the interior of the housing, and transfer means for carrying articles to be cured into and out of the housing whereby additional access to articles in the heated interior is unnecessary, said kiln housing and transfer means comprising:

a plurality of fixed wall portions defining the housing and an aperture therein, said wall portions being heat insulated;

axle means vertically positioned within said aperture and rotatably supported at its top and bottom by said wall portions;

at least three spaced wall panels joined to and extending radially from said axle means to form a roundabout means, said panels being arranged so as to be movable, upon rotation of the axle means, to positions wherein two of the panels cooperate to close off said aperture, said two panels being heat insulated;

sealing means provided on at least said two panels or said fixed wall portions to reduce heat loss through the aperture when it is closed by said two panels;

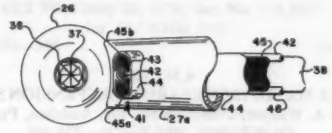
article holding means positioned between adjacent wall portions; and

a lever and ratchet means for rotating the axle means to selectively position the article holding means and enclose a minimum of 180° of the roundabout means within the interior of the housing while closing the aperture by means of said two panels.

4,341,518
DENTAL HANDPIECE

Richard A. Wallace, Box 201, Gwynedd, Pa. 19436

Filed Dec. 20, 1979, Ser. No. 105,595
Int. Cl.³ A61C *00/00*
U.S. Cl. 433—29 **13 Claims**



1. In a contra angle dental handpiece for driving a bur within a head, which is attached to the distal end of a hollow handle, with the proximal end of the handle attached to a coupling, the improvement comprising:

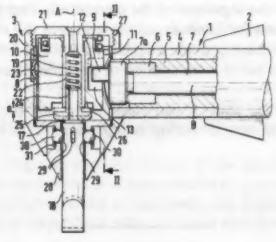
a. means respectively located wholly within said handle for conducting chip air, water, and light services from said coupling to the distal end, where the services exit together at a single location in a cluster therefrom,

b. whereby chip air, water and light emerge immediately adjacent the head without adding bulk to the handle, and light emanating from said light service falling on said bur with minimum shadow.

4,341,519
DENTAL ANGLED VIBRATION MEMBER

Bernhard Kuhn, Biberach, and Eugen Bochtler, Mittelbiberach, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voight GmbH & Co., Biberach an der Riss, Fed. Rep. of Germany

Filed Feb. 26, 1981, Ser. No. 238,664
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008297
Int. Cl.³ A61C *3/08*
U.S. Cl. 433—122 **16 Claims**



1. In a surgical dental or dental technician's angled vibration member; including a gripping sleeve portion having a drive shaft supported therein; a head sleeve portion arranged at one end of said gripping sleeve portion and having an axis extending at an angle to the axis of the gripping sleeve portion; an impact piston axially reciprocable in said head sleeve portion; an eccentric at the drive shaft end for imparting a return stroke to said impact piston; said impact piston having at its edge a side recess with a contact stop for the engagement of said eccentric; and having an operating spring associated therewith for effecting the operating stroke after passing of the contact stop, said spring being stressed prior to reaching the contact stop, so that the impact piston during its operating stroke will impart to the end of the axially movably supported, tamping-type vibration work tool in the interior of the head sleeve

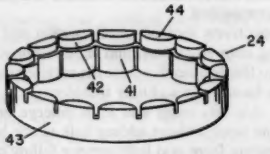
portion; the improvement comprising: a retaining spring in said head sleeve portion acting on the end of the vibration work tool at the interior of the head sleeve portion, said retaining spring being supported on the head sleeve portion; and a hammer piston being arranged intermediate said retaining spring and the vibration work tool.

4,341,520

DENTAL HANDPIECE BEARING SUSPENSION SYSTEM

Richard A. Wallace, 2750 Audubon Rd., Audubon, Pa. 19407

Filed Jan. 19, 1981, Ser. No. 226,408
Int. Cl.³ A61C *1/05*
U.S. Cl. 433—132 3 Claims



1. In a dental handpiece for rotating a bur in a housing, having a turbine mounted on a shaft between a front and rear ball bearing, said front bearing having an inner race and a flanged outer race, the improvement comprising:

an elastomeric ring comprising a plurality of equal segments each having an interior arcuate surface, an exterior surface which is smooth and circular, a plurality of discrete, arcuate pads positioned upon said arcuate segments wherein a single pad is integrally formed with and smaller than a single arcuate segment, the remaining surfaces being flat,

said elastomeric ring positioned around the front ball bearing outer race, and being held in place radially by the cylindrical section of the outer race, and axially by the flange,

whereby the segments of the elastomeric ring provide compensation for dimensional variations of the ring and housing bore, and provide a squeezing force to lessen noise and prevent outer race rotation of the front bearing, and further,

whereby the pads of said elastomeric ring provide an axial pre-load on said bearing, independent of the radial squeeze load.

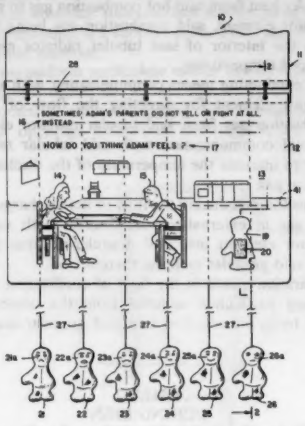
4,341,521

PSYCHOTHERAPEUTIC DEVICE

Laura B. Solomon, 150 Prospect Park W., Brooklyn, N.Y. 11215

Filed Mar. 2, 1981, Ser. No. 238,669
Int. Cl.³ G09B *19/00*
U.S. Cl. 434—236 16 Claims

1. A psychotherapeutic device comprising; a sheet having a scene depicted thereon so that a therapist can tell a story to a subject child relative to said scene, and a region disposed within said scene, further comprising a plurality of members depicting a like character and wherein each of said members depicts said character displaying a specific different emotion, said members being formed so as to be selectively received in said region, whereby the subject upon viewing the scene in light of the story selects one of said members and places the



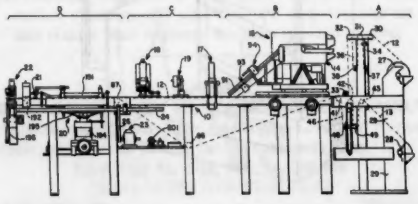
member in said region thereby conveying the emotion felt by the subject child relative to the scene.

4,341,522

METHOD AND APPARATUS FOR MAKING POUCHES WITH DISPENSING FITTINGS

Rene J. Gaubert, 4219 Oakmore Rd., Oakland, Calif. 94602

Filed May 5, 1980, Ser. No. 146,506
Int. Cl.³ B31B *1/84*
U.S. Cl. 493—213 8 Claims



1. In an automated method of forming a pouch of film material with one wall portion of the pouch having an annular fitting secured to the same, the steps of advancing a web of the film material along a substantially horizontal plane, the movement being recurrent with periods of rest between periods of advancing movement, the advancing movement being for equal distances corresponding to successive connected web portions of equal length that are desired for forming the pouches, the advancing movement serving to carry each of such web portions through depositing and fitting securing regions, depositing a dispensing fitting on each web portion in the depositing region, orienting each fitting to the position on the web where it is desired to secure the same, such orienting being carried out by shifting the fitting laterally of the direction of web movement during advancing movement of the web to align the same with the fitting securing region, such lateral shifting being carried out by contacting the fitting with stationary guide rails during such advancing movement, and by arresting the fitting in said region by engaging the fitting with a removable stationary barrier, securing each such fitting to a web portion in the fitting securing region during a rest period and while the fitting is being retained in alignment with the fitting securing region, and then moving the barrier to an

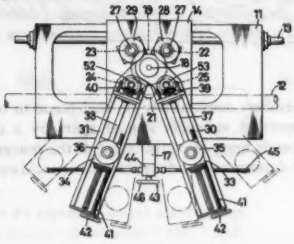
out-of-the-way position and advancing the web with the secured fitting.

4,341,523

APPARATUS FOR MANUFACTURING PAPER PIPES

Shickinosuke Ikuta, 13, 2-chome, Shimoshinjo-cho, Higashiyodogawa-ku, Osaka-shi, Osaka-fu, Japan

Filed Jul. 29, 1980, Ser. No. 173,495
Claims priority, application Japan, Sep. 17, 1979, 54-121270
Int. Cl.³ B31C *3/00*
U.S. Cl. 493—301 **1 Claim**



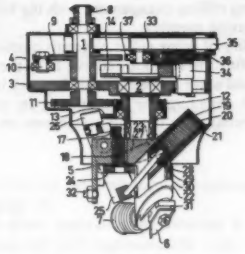
1. An apparatus for manufacturing paper pipes comprising: a horizontal mandrel in a fixed position; a table provided under said mandrel and movable in the axial direction of said fixed mandrel; a gear case fixed to the under surface of said table; a main vertical shaft provided substantially in the center of said gear case, the upper end portion of said main vertical shaft projecting above said table; a large spur wheel rotatably mounted on said main vertical shaft in said gear case; a means on said table for driving said large spur wheel; four vertical countershafts disposed around said large spur wheel; four small spur wheels fixed to the lower ends of said four vertical countershafts and engaging with said large spur wheel, the upper ends of said four vertical countershafts projecting above said table; two first drums fixed to the projecting parts of two of said four vertical countershafts so as to be stationary on said table and spaced from one side of said mandrel; two bevel gears on the upper ends of the remaining two of said four vertical countershafts and close to said fixed mandrel; two supporting frames extending horizontally over said table, one end of each of said two supporting frames being rotatably supported on the projecting part of said main vertical shaft; two horizontal shafts on said two supporting frames, respectively, and extending in the longitudinal directions thereof; a bevel gear provided on the end of each of said two horizontal shafts toward said main vertical shaft and engaging corresponding ones of said two bevel gears on the upper ends of said two vertical countershafts close to said fixed mandrel, two sliders mounted on said two supporting frames, respectively, and slidable in the longitudinal directions of said supporting frames; means for adjusting the positions of said two sliders on said two supporting frames; two second drums rotatably mounted on said two sliders, respectively; means for transmitting the rotary motion of said two horizontal shafts to said two second drums, respectively, for rotating said two second drums in the opposite direction to the direction of rotation of said two first drums irrespective of where said two sliders are positioned on said two supporting frames; a means for adjusting the angle formed between said two supporting frames; a belt running over one of said two first drums and one of said two second drums; and another belt running over the other of said two first drums and the other of said two second drums, the side of each of said two belts advancing toward the first drum and the side of each of said two belts receding from the first drum being crossed in such a manner that the advancing side is placed above the receding side and said fixed mandrel being between the advancing and receding sides, the side of one of said two belts advancing toward the first drum winding around said mandrel in a single loop around said fixed mandrel, and the side of the other of said two belts receding from the first drum winding around said mandrel in a single loop around said fixed mandrel.

4,341,524

WORKING HEAD FOR A PASSEPARTOUT-MACHINE

Hans H. Weil, Östra Tullgatan 8, S-211 20 Malmö, Sweden

PCT No. PCT/SE79/00120, § 371 Date Jan. 29, 1980, § 102(e) Date Jan. 25, 1980, PCT Pub. No. WO79/01139, PCT Pub. Date Dec. 27, 1979
PCT Filed May 25, 1979, Ser. No. 129,382
Int. Cl.³ B26D *1/02*
U.S. Cl. 493—355 **14 Claims**



1. A working head in an apparatus for providing rectangular cuttings in a plain material, comprising:

a holder, said holder having a knife and/or an impression roller mounted thereon,

said holder being vertically slidably mounted on a rotatable housing, wherein in the lower position the knife is positioned to cut the plain material, said rotatable housing being fixedly mounted on a first shaft, a Maltese cross connected to the upper portion of said first shaft, a securing means positioned to selectively hold the Maltese cross secure at any given selected position,

a drive shaft essentially parallel to said first shaft, said drive shaft operatively engaged with the first said shaft to turn the same,

a first cam means operatively connected to the drive shaft to disengage the securing means of the Maltese cross and then permit the securing means to engage and secure the Maltese cross after a certain rotation of the drive shaft,

and a second cam operatively connected to the drive shaft to cause the holder to rise up and away from the plain material and then to lower it again upon the said certain rotation of the drive shaft,

whereby during said certain rotation of the drive shaft, the Maltese cross is freed to rotate, rotated by a given amount and then secured, while concurrently the holder with the knife and/or impression roller is raised and then lowered.

4,341,525

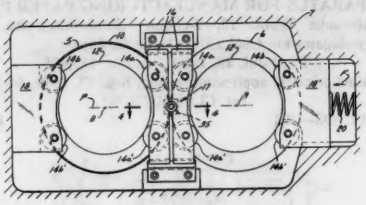
ADJUSTABLE MOUNTING FOR COOPERATING DIE CYLINDERS

Eugene W. Wittkopf, Suamico, Wis., assignor to Magna-Graphics Corporation, Oconto Falls, Wis.

Filed Sep. 29, 1980, Ser. No. 192,322
Int. Cl.³ B23D *25/12*; B26D *1/40*
U.S. Cl. 493—370 **11 Claims**

1. Apparatus comprising a pair of spaced apart cylinders carried by a frame for a cooperation that causes said cylinders to impose substantially high radial displacement forces upon one another, said cylinders being rotatable about respective concentric axes that are contained in a common plane and are normally fixed in substantially parallel relation to one another, said apparatus being characterized by:

A. each of said cylinders having on each end thereof a concentric bearer ring which
(1) is of smaller diameter than the cylinder and
(2) is adjacent to a bearer ring on the other cylinder;
B. a rigid supporting member for each bearer ring;
C. guide means mounting said supporting members on the frame for bodily motion in directions parallel to said plane and transverse to said axes, with each supporting member disposed adjacent to its bearer ring and with the supporting members for adjacent bearer rings adjacent to one another and between those bearer rings;
D. a pair of roller elements carried by each of said supporting members and confined to rotation relative thereto, the roller elements on each supporting member
(1) being spaced to opposite sides of said plane and
(2) having rolling engagement with the bearer ring for the supporting member;
E. a plurality of other roller elements carried by said frame and confined to rotation relative to it, there being at least one of said other roller elements for each bearer ring, each rollingly engaging the bearer ring in circumferentially spaced relation to the roller elements on the supporting member for the bearer ring and cooperating with them to confine the bearer ring against radial displacement; and
F. adjustable spacer means reacting between adjacent supporting members substantially on said plane to maintain those supporting members spaced apart by a distance which depends upon the adjustment of the spacer means and which determines the distance between said cylinders.



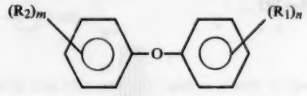
4,341,526

LEVELLING AGENT AND PROCESS OF LEVELLING FOR THE DISPERSE DYEING OF HYDROPHOBIC MATERIALS

Rolf G. Kuehni, Scotch Plains, and Thomas C. Cox, Boonton, both of N.J., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Aug. 30, 1977, Ser. No. 829,174
Int. Cl.[3] D06P *1/651*
U.S. Cl. 8—610 26 Claims

1. In a process for the disperse dyeing of synthetic hydrophobic fiber materials by immersing said materials into an aqueous dye bath maintained at an elevated temperature the improvement comprising adding an effective amount of a levelling agent which contains diaryl ethers of the formula



wherein

R_1 and R_2 represent lower alkyl groups
n is an integer of between 1 and 3 and
m is an integer of between 0 and 3.

4,341,527

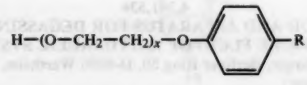
PROCESS AND REAGENT FOR DETERMINATION OF THE HEMOGLOBIN CONTENT OF BLOOD

Rolf Zander, Reinhold-Schneider-Str. 1; Werner Lang, Alter Ruh-Weg, both of Mainz, and Hans U. Wolf, Lisztstrasse 10, Neu-Ulm, all of Fed. Rep. of Germany

Continuation of Ser. No. 5,456, Jan. 22, 1979, abandoned. This application Jul. 21, 1980, Ser. No. 170,575
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 2803109
Int. Cl.[3] G01N *33/72*
U.S. Cl. 23—230 B 6 Claims

4. In the method of determining the hemoglobin content of blood by hemolyzing the blood, converting the hemoglobins into hematin with an aqueous alkaline solution and photometrically determining the alkaline hematin content, the improvement wherein the conversion of the hemoglobins into hematin is effected with an aqueous 0.05–0.5 M solution of sodium hydroxide or potassium hydroxide comprising 0.5–10% by weight of a water-soluble, liquid, nitrogen-free, non-ionic detergent selected from the group consisting of

(a) a polyethyleneglycol p-alkylphenyl ether of the formula



wherein

x is an integer from 7 to 12, inclusive, and
R is an alkyl of 1 to 12 carbon atoms;

(b) a polyethyleneglycol lauryl ether;
(c) a polyethyleneglycol cetyl ether;
(d) a polyethyleneglycol oleyl ether; and
(e) a polyethyleneglycol stearyl ether,

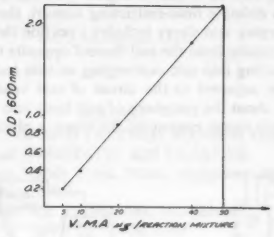
whereby all hemoglobin derivatives which occur in blood and heme derivatives are converted into a uniform product having a distinct absorption maximum in the visible spectral range in which the subsequent photometric measurement is carried out.

4,341,528

SIMPLE, NON-CHROMATOGRAPHIC, HIGHLY SPECIFIC METHOD FOR THE DETERMINATION OF URINARY VANILMANDELIC ACID

M. Zouheir M. Habbal, Beirut, Lebanon, assignor to Rational Alternative, Mission Viejo, Calif.

Filed Jul. 31, 1980, Ser. No. 174,132
Int. Cl.[3] G01N *33/52;* C07C *107/06;* C09B *29/00*
U.S. Cl. 23—230 B 3 Claims



1. The method for the determination of vanilmandelic acid comprising the steps of:

(a) forming a diazo derivative by reacting a p-nitrobenzenediazonium salt with vanilmandelic acid;
(b) extracting said derivative into ethyl acetate;
(c) forming a stable chromophore of said derivative by adding to the ethyl acetate extract thereof effective amounts of dimethylsulfoxide and 2-amino-2-methyl-1-propanol; and
(d) quantitatively determining said chromophore.

4,341,529

MOTOR FUEL

Lyle D. Burns, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 24, 1980, Ser. No. 200,289
Int. Cl.[3] C10L *1/22*
U.S. Cl. 44—63 6 Claims

1. A gasoline composition containing an antiknock quantity of 2-(methylamino) pyridine.

4,341,530

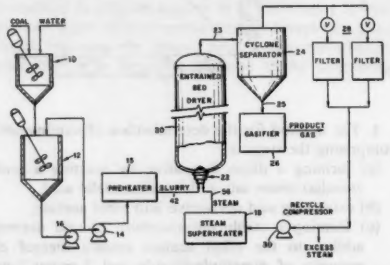
SLURRY ATOMIZER FOR A COAL-FEEDER AND DRYER USED TO PROVIDE COAL AT GASIFIER PRESSURE

John L. Loth; William C. Smith, and Gary R. Friggens, all of Morgantown, W. Va., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Continuation of Ser. No. 100,663, Dec. 5, 1979, abandoned. This application Jun. 23, 1981, Ser. No. 276,610
Int. Cl.[3] C10J *3/50*
U.S. Cl. 48—73 3 Claims

1. A coal-water slurry atomizer in combination with an apparatus for feeding coal into gasification means operable at a pressure greater than atmospheric pressure comprising mixing means for forming a slurry of coal and water, pumping means coupled to the mixing means for pumping said slurry to a pressure sufficient for introduction into the gasification means, heating means for providing steam at a temperature and flow rate sufficient to vaporize the water in said slurry, an elongated entrained bed coal dryer, conduit means for separately conveying the slurry and the steam to said dryer adjacent one end thereof, a coal-water slurry atomizer coupled to said conduit means and in registry with said coal dryer for atomizing the slurry in the presence of the steam into droplets of a predetermined size and for discharging the droplets and steam into said dryer to effect evaporation of the water from the slurry with-

out excessively heating the coal to inhibit agglomeration and devolatilization of the coal, means coupled to said dryer adjacent the end thereof opposite said atomizer for separating the coal from said stream, and conduit means for conveying the separated coal into the gasification means, said atomizer consisting of a housing supporting a body affixed to said coal dryer and having an internal open-end elongated cavity therein with the open end of said cavity being in registry with the interior of said dryer, said housing having a converging section and a diverging section disposed adjacent to the open end of the cavity to define a flow-restricting venturi, the conduit means for conveying said slurry includes a portion thereof projecting into said cavity from the end thereof opposite to said open end and extending into said converging section and terminating at a location adjacent to the throat of said venturi, an annulus disposed about the periphery of said body and in registry with the conduit means conveying the steam, a plurality of passage-



way means disposed about the circumference of said body for placing said annulus in registry with the interior of said cavity, each of said passageway means having a longitudinal axis disposed tangentially to the longitudinal axis of said cavity for imparting a spiral flow to the steam entering the cavity for forming a vortex of steam within the cavity about the slurry conduit means with the flow of steam encompassing and contacting the stream of slurry discharging from the conduit segment for shearing slurry from the slurry stream at the interface thereof to effect the atomization of the slurry, the velocity of said spiral flow of steam being sufficiently increased in said converging section prior to contacting the slurry to a value sufficient to impart said shearing and atomization of said slurry, and said diverging section being of a length sufficient to inhibit impingement of slurry droplets resulting from the atomization of the slurry onto wall surfaces of the housing forming the diverging section prior to the droplets entering the interior of said coal dryer.

4,341,531

PRODUCTION OF METHANE-RICH GAS

Roger G. Duranleau, Georgetown, Tex., and Walter C. Gates, Jr., Carmel, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,377
Int. Cl.³ C07C *1/04, 1/10*
U.S. Cl. 48—197 R **29 Claims**

1. A process for the production of a methane-containing gas comprising:

(1) introducing a gas mixture comprising CO and at least one member of the group consisting of H_2 and H_2O at a temperature in the range of about 375° to 1500° F. and a pressure in the range of about 1 to 300 atmospheres into a reaction zone containing an unsupported catalyst comprising an alkali-metal promoted partially reduced mixture of at least one nickel uranate and at least one oxide of nickel, wherein the total weight percent of uranium present in said catalyst basis total weight of said catalyst composition is in the range of over 50 to about 90 weight percent;

(2) converting CO in said gas mixture into CH_4 by reacting CO in said reaction zone with hydrogen which is either (a) introduced with said gas mixture, (b) produced by the water-gas shift reaction in said reaction zone, or both (a) and (b); and

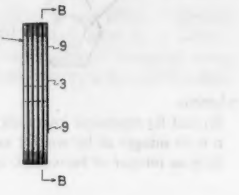
(3) removing a CH_4-containing gas from said reaction zone.

4,341,532

LAMINATED ROTARY GRINDER AND METHOD OF FABRICATION

Kunimasa Oide, Kawanishi, Japan, assignor to Daichiku Co., Ltd., Hyogo, Japan

Filed Jan. 13, 1978, Ser. No. 869,374
Claims priority, application Japan, Jan. 18, 1977, 52-4798; Jun. 18, 1977, 52-72363
Int. Cl.³ B24D *11/00*
U.S. Cl. 51—297 **15 Claims**



1. A laminated rotary grinder comprising a plurality of thin grindstone discs laminated together with an adhesive in an axial direction with a fixed space between each disc wherein the thickness of each of said discs is between 1 and 10 mm, the width of the fixed space between laminated discs is between 0.05 and 4 mm and the thickness of each disc is always greater than the spacing between discs.

4,341,533

HIGH-HARDNESS ABRASIVE PRODUCT BASED ON ALUMINA AND ALUMINIUM OXYCARBIDES AND PROCESS FOR PREPARING SAME

Marc Daire, Illkirsch-Graffenstaden; Yves Larrere, Strasbourg, and Andre Mangin, Annecy, all of France, assignors to Societe Francaise D'Electrometallurgie-Sofrem, Paris, France

Filed Jul. 3, 1980, Ser. No. 165,686
Claims priority, application France, Jul. 5, 1979, 79 17935
Int. Cl.³ C04B *31/16*
U.S. Cl. 51—309 **16 Claims**

1. A high-hardness abrasive product, characterised in that it is constituted by the combination of crystalline phases of alumina and of at least one of the two aluminium oxycarbides Al_2OC and Al_4O_4C, in which the ratio ρ of the number of carbon atoms to the number of carbon atoms plus oxygen atoms (C/C+O) is between 0.01 and 0.50.

4,341,534

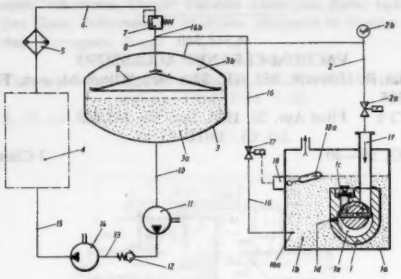
METHOD AND APPARATUS FOR DEGASSING THE PRESSURE FLUID OF A HYDRAULIC SYSTEM

Herbert Bürger, Berliner Ring 50, D-6980 Wertheim, Fed. Rep. of Germany

Filed Sep. 4, 1980, Ser. No. 183,894
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2937957
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—55 **6 Claims**

1. In a method for degassing a pressure fluid of a hydraulic system, including the step of producing a vacuum in a free space above said pressure fluid in a reservoir containing said pressure fluid, whereby permanent gases which are contained in said pressure fluid are continuously removed, the improvement comprising wherein the step of producing said vacuum is carried out by a vacuum pump with a selective action which

pumps said permanent gases but does not pump the vapor of said pressure fluid, whereby the partial pressure of said perma-



nent gases in said free space of said reservoir is lowered to a value which is substantially below atmospheric pressure.

4,341,535

AMMONIUM SULFATE RECOVERY PROCESS

Hsin-Chih Wu, Parma, Ohio, and Edward J. Sockell, Port Lavaca, Tex., assignors to The Standard Oil Co., Cleveland, Ohio

Filed Jan. 2, 1981, Ser. No. 222,190
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—85 **6 Claims**

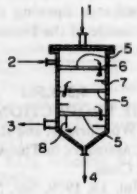
1. A process for treating the quench tower bottoms produced by an acrylonitrile or methacrylonitrile purification and recovery unit to facilitate disposal thereof, said quench tower bottoms containing water, ammonium sulfate and a heavy organic material, said process comprising contacting said quench tower bottoms with acetonitrile to extract the heavy organic material therefrom by liquid phase extraction.

4,341,536

METHOD FOR CONTINUOUSLY REMOVING FINE DUST PARTICLES FROM GASES

Fumiki Murakami, Otake; Minoru Ikeda, Hiroshima; Takashi Tokutomi, and Toshiharu Nakano, both of Otake, all of Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 77,270, Sep. 20, 1979, abandoned. This application Jan. 12, 1981, Ser. No. 224,435
Claims priority, application Japan, Oct. 24, 1978, 53-146166
Int. Cl.³ B01D *47/02, 47/12*
U.S. Cl. 55—93 **2 Claims**



1. A method for continuously removing fine dust particles from gases which contain them, consisting essentially of:

introducing said gas and a liquid into a gas-liquid contact apparatus, said liquid being delivered to a tray(s) in said apparatus at a rate to form a liquid layer on said tray(s), directing said gas onto said liquid layer and then directing said gas and said liquid together in parallel at a high speed of a gas linear velocity of 10–80 m/sec and at a liquid-to-gas ratio of 1 to 50 l/m^3 through slit(s) or hole(s), which are located in the general plane of said tray(s) the slit(s) or hole(s) being sized so as to provide said gas linear velocity and said liquid-to-gas ratio, impinging the high speed mixture against a baffle plate having an imperforate section located directly beneath the slit(s) or hole(s) in order to coagulate said dust in said liquid,

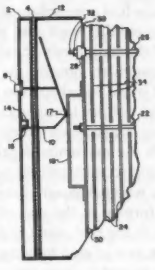
removing the liquid containing said coagulated dust and exhausting said gas having said coagulated dust removed therefrom.

4,341,537

SHORTING AND TEST MECHANISM FOR ELECTROSTATIC AIR CLEANER

Larry C. Rodgers, Circle Pines, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 8, 1981, Ser. No. 251,847
Int. Cl.³ B03C *3/02*
U.S. Cl. 55—139 **3 Claims**



1. In an electrostatic air cleaner including first collector electrodes, second collector electrodes, a high voltage supply connected to said first and second collector electrodes for producing an electrostatic charge therebetween with said first collector electrodes being held at a high potential and said second collector electrodes being held at a ground potential, electrically grounded housing enclosing and spaced from said first and second collector electrodes while allowing an air flow thereacross and an access door attached to said housing for affording access to the electrodes for cleaning the electrodes, the improvement comprising

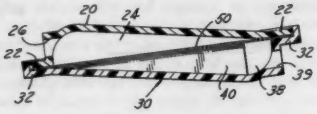
electrically conductive shorting means attached to an inner surface of said access door for providing a transient contact with said first collector electrodes during an opening operation of said access door and

selectively operable test means penetrating said access door and attached to said shorting means for urging said shorting means into contact with said first electrodes, wherein said shorting means includes an electrically conductive one piece cantilever spring having one end connected to said access door, a pivot spaced from said one end of said spring and bearing on an interior grounded surface in said housing during a closed position of said access door and an opening operation of said access door and a bifurcated second end having a first extension attached to said test means and a second extension normally spaced from said first electrodes at a distance prohibiting an electrical arc during a closed position of said access door while contacting said first electrodes during an opening operation of said access door, said test means including an electrically insulating pushbutton means connected to said first extension of said shorting means and extending through said access door.

4,341,538
INTRAVENOUS FILTER

Attila Vadnay, Ann Arbor, and Mary K. Boomus, Chelsea, both of Mich., assignors to Gelman Instrument Company, Ann Arbor, Mich.

Filed Aug. 18, 1978, Ser. No. 934,957
Int. Cl.³ B01D 31/00
U.S. Cl. 55—159 2 Claims



1. A filter housing and assembly for intravenous fluids which can be taped to the limb of a patient which comprises:

(a) a bottom, rectangular, membrane-support housing having a peripheral flange lying in a plane, and a chamber within said flange descending from substantially no depth at one end to a maximum depth at the other end with a flat bottom surface to provide an elongate wedge-shaped chamber and a luer connection at said other end on an axis substantially parallel with said plane and extending in a direction of the major axis or said housing,

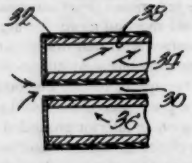
(b) a top, rectangular, housing having a peripheral flange lying in said plane and shaped to mate with the peripheral flange of said bottom housing and a chamber within said flange having a maximum height at one end opposite to the end with the maximum depth of the bottom housing and decreasing to substantially no depth at the other end to provide a wedge-shaped elongate chamber with a luer connection formed at the end of maximum height on an axis parallel to the said plane and extending in a direction of the major axis of said housing whereby flow is in-line through the assembly from one end to the other, and

(c) a filter membrane peripherally captured between said flanges to lie between said elongate chambers, whereby when said bottom housing is taped to the limb of a patient it conducts body heat to intravenous liquid passing through said filter membrane to said bottom housing.

4,341,539
THERMALLY REGENERATIVE DESICCANT ELEMENT

Dimitri Gidaspow, 1517 Cedar La., Northbrook, Ill. 60062; Zalman Lavan, 947 Ridge Ct., Evanston, Ill. 60202, and Michael Onischak, 3408 Ithaca Rd., Olympia Fields, Ill. 60461

Continuation-in-part of Ser. No. 65,569, Aug. 10, 1979, abandoned. This application Dec. 12, 1980, Ser. No. 215,815
Int. Cl.³ B01D 53/04
U.S. Cl. 55—278 4 Claims

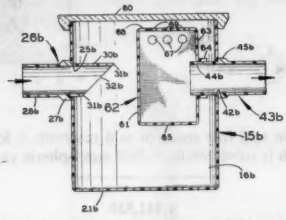


1. A desiccant element, comprising: micron size silica gel, ground ammonium bicarbonate and a fluoroplastic powder blended into a paste and physically worked into a thin sheet by roller reduction, said ammonium bicarbonate then having been made to decompose by heating said sheet; and wall means connected to said sheet for conducting heat away from said sheet and for supporting said sheet on one of its sides, whereby thermal energy on the other side of said wall means is conducted to said sheet to drive off moisture held by said silica gel and regenerate said desiccant element and a portion of the heat liberated from said silica gel upon the sorption of moisture is transferred to the other side of said wall means.

4,341,540
VACUUM CLEANER ACCESSORY

Charles R. Howerin, 852 NE. 20th Dr., Wilton Manors, Fla. 33305

Filed Apr. 20, 1981, Ser. No. 255,463
Int. Cl.³ B01D 45/08
U.S. Cl. 55—307 3 Claims



1. In an accessory for adapting a vacuum cleaner for wet operation comprising:

a housing defining a liquid collection chamber;

a hollow, open-ended intake fitting extending from the outside into the housing, said intake fitting defining a generally horizontal intake passageway which terminates inside the housing in a generally horizontal discharge opening above said liquid collection chamber;

a hollow, open-ended outlet fitting extending from inside said housing above said liquid collection chamber to the outside;

a hollow receptacle attached to said outlet fitting inside said housing and providing a baffle in spaced confronting relationship to said discharge opening of the intake fitting for deflecting water and dirt discharged through said discharge opening down into the collection chamber and blocking said outlet fitting from said discharge opening of the intake fitting, said receptacle having its hollow interior in fluid communication with said outlet fitting and having a top with openings formed therein positioned higher than said discharge opening of the intake fitting for passing air from the inside of the housing to said outlet fitting,

the improvement wherein said receptacle has sides with openings formed therein near the top of the receptacle positioned higher than said discharge opening of the intake fitting for passing air from the inside of the housing to said outlet fitting.

4,341,541
PROCESS FOR THE PRODUCTION OF OPTICAL FIBER

Franklin W. Dabby, Woodbridge, and Ronald B. Chesler, Cheshire, both of Conn., assignors to Times Fiber Communications, Inc., Wallingford, Conn.

Filed Jul. 13, 1979, Ser. No. 57,458
Int. Cl.³ C03B 19/06
U.S. Cl. 65—3.12 7 Claims

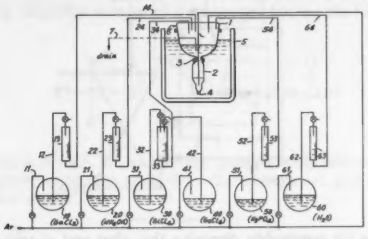
1. A process for the production of optical fiber comprising continuously depositing and continuously sintering glass particles produced by high temperature pyrolysis of gaseous reactants on a cylindrical glass rod to produce an outer region of sintered glass surrounding said rod having an index of refraction lower than that of said rod, heating the resulting preform to the drawing temperature and drawing said preform into optical fiber, wherein said continuous sintering is effected by a heat source disposed beyond the point of the particulate deposition on the cylindrical glass rod.

4,341,542

MANUFACTURING METHOD OF GLASS FOR OPTICAL TRANSMISSION BODY

Osamu Nakamura, Akashi; Takeshi Akamatsu, Kobe, and Junjiro Goto, Takasago, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Feb. 6, 1981, Ser. No. 231,980
Claims priority, application Japan, Feb. 8, 1980, 55-15041
Int. Cl.³ C03C 3/16, 3/30
U.S. Cl. 65—17 5 Claims



1. A method of manufacturing glass for an optical transmission body, said method comprising the steps of

precipitating an oxide of at least one glass forming element by the hydrolysis reaction of a halogen compound of said glass forming element in the liquid phase to provide a precipitate;

producing a phosphate including said glass forming element by adding a liquidous phosphoric acid to said precipitate to provide a product;

removing the water from said product containing said phosphate; and

thereafter vitrifying said phosphate by heating.

4,341,543

METHOD OF MAKING STRENGTHENED TRANSPARENT GLASS-CERAMIC, PARTIALLY BODY-CRYSTALLIZED, AND SURFACE-CRYSTALLIZED GLASS ARTICLES

Ronald L. Andrus, Elmira, N.Y.; Richard F. Reade, deceased, late of Corning, N.Y., and by Clara M. Reade, administratrix, Flushing, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 9, 1981, Ser. No. 223,580
Int. Cl.³ C03B 32/00; C03C 3/22
U.S. Cl. 65—30.1 5 Claims

1. A method for making a transparent glass-ceramic, partially body-crystallized, or surface-crystallized glass article exhibiting an abraded modulus of rupture value in excess of 20,000 psi, wherein beta-quartz solid solution constitutes the predominant crystal phase, which comprises the steps of:

(a) melting a batch for a glass consisting essentially, expressed in terms of weight percent on the oxide basis, of about 2.5–6% Li_2O, 0.5–5% RO, wherein RO consists of BaO, CaO, MgO, SrO, and ZnO, 16–25% Al_2O_3, 64–73% SiO_2, and 3.0–6% RO_2, wherein RO_2 consists of 0–6% TiO_2 and 0–3.5% ZrO_2;

(b) simultaneously cooling the melt to a temperature at least below the transformation range thereof and forming a glass article of a desired configuration therefrom;

(c) exposing the glass article to vapors of SO_2 at a temperature between the annealing point and the softening point of the glass for a period of time sufficient to cause a reaction to occur to a depth of at least 0.002" in the surface of the glass between Li^+ ions and SO_2 vapors to form a deposit of Li_2SO_3 and/or Li_2SO_4 thereon;

(d) removing the deposit of Li_2SO_3 and/or Li_2SO_4 from the glass surface; and

(e) heating the glass article to a temperature between 750°–1000° C. for a period of time sufficient to cause the crystallization in situ of beta-quartz solid solution to form a glass-ceramic article, a partially body-crystallized article, or a surface-crystallized glass article.

4,341,544

METHOD OF MAKING PERALUMINOUS NEPHELINE/KALSILITE GLASS-CERAMICS

George H. Beall, Big Flats, and Joseph E. Pierson, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 202,739, Oct. 31, 1980, Pat. No. 4,310,595.
This application Aug. 20, 1981, Ser. No. 294,466
Int. Cl.³ C03B 27/02, 32/00; C03C 3/22
U.S. Cl. 65—30.14 2 Claims

1. A method for making a glass-ceramic article which is extremely resistant to impact and spontaneous delayed breakage, is capable of being sawn with a diamond wheel to a depth of over one-third the cross section thereof without breakage, and exhibits a modulus of rupture of at least 150,000 psi, said article consisting of a body portion and an integral surface compression layer having a thickness of at least 0.005", said method comprising the steps of:

(a) melting a batch for a glass consisting essentially, expressed in weight percent on the oxide basis, of about 8–13% Na_2O, 7–13% K_2O, 30–36% Al_2O_3, 35–43% SiO_2, and 6–10% wherein RO_2 consists of 6–10% TiO_2 and 0–4% ZrO_2, wherein the molar ratio Al_2O_3:SiO_2 is >0.5 but <0.6 and the molar ratio K_2O:Na_2O is $>1:3$ but <1;

(b) simultaneously cooling said melt to a temperature at least below the transformation range thereof and shaping a glass article therefrom;

(c) heat treating said glass article at a temperature between about 900°–1050° C. for a sufficient length of time to crystallize said glass article in situ to a glass-ceramic article wherein crystals not exceeding about 0.5 micron in diameter of nepheline solid solution corresponding to the formula $Na_{8-x}K_xAl_8Si_8O_{32}$, with x varying from 0.25–4.73, constitute the predominant crystal phase; and then

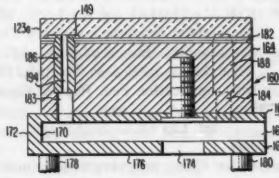
(d) contacting said glass-ceramic article with a source of K^+ ions at a temperature between about 800°–900° C. for a sufficient length of time to replace at least part of the Na^+ ions of said nepheline solid solution with K^+ ions to a depth within said glass-ceramic article of at least 0.005", thereby converting said nepheline solid solution to kalsilite and effecting an integral compressively stressed surface layer on said article.

4,341,545

BEADING APPARATUS FOR MAKING AN ELECTRON GUN ASSEMBLY HAVING SELF-INDEXING INSULATING SUPPORT RODS

John R. Hale, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 29, 1981, Ser. No. 258,739
Int. Cl.³ C03C 27/02
U.S. Cl. 65—154 7 Claims



1. In a beading apparatus for an electron gun assembly, said

beading apparatus having at least two bead blocks, said gun assembly having at least two insulating support rods with a plurality of indexing cavities formed in a surface of each of said support rods, the improvement wherein each of said bead blocks comprises:

a beading support surface for supporting one of said insulating support rods, said beading support surface having a plurality of apertures formed therein,

a plurality of indexing pins, each of said pins being disposed in a different one of said apertures, each of said indexing pins having a reference end extending beyond said beading support surface and projecting into said indexing cavities of one of said insulating support rods, and

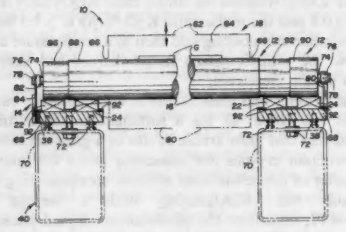
securing means for retaining each of said support rods in contact with said indexing pins.

4,341,546

ROLL DRIVE MECHANISM FOR GLASS SHEET PROCESSING EQUIPMENT

Norman C. Nitschke, 9102 Buck Rd., Perrysburg, Ohio 43551, and Ronald A. McMaster, 420 Water St., Woodville, Ohio 43469

Filed Feb. 25, 1981, Ser. No. 237,828
Int. Cl.³ C03B *35/18*
U.S. Cl. 65—163 **13 Claims**



1. In glass sheet processing equipment including a horizontal roller conveyor having elongated horizontal rolls spaced along the length thereof extending laterally with respect thereto so as to support and convey glass sheets thereover upon rotation thereof, a roll drive mechanism comprising: first and second continuous drive loops extending along the conveyor in an overlapping relationship with each other and alternately engageable in a driving relationship with the rolls of the conveyor over associated lengths thereof which are selectively adjustable to provide a desired transition between the driving of the rolls; a first drive for driving the first drive loop to rotatively drive the rolls engaged therewith; and a second drive for driving the second drive loop to rotatively drive the rolls engaged therewith, whereby the drive loops can be driven together or independently to provide synchronous or independent glass sheet conveyance over associated lengths of the conveyor.

4,341,547

APPARATUS FOR ENCLOSING HIGHLY RADIOACTIVE WASTE MATERIAL IN A GLASS MELT

Wilfried C. Heimerl, Mol, Belgium, assignor to Deutsche Gesellschaft fur Wiederaufarbeitung, Fed. Rep. of Germany

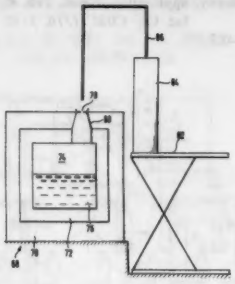
Filed Jul. 1, 1980, Ser. No. 165,214
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1979, 2927795
Int. Cl.³ C03B *5/28, 7/18*
U.S. Cl. 65—165 **8 Claims**

1. Apparatus for filling an evacuated ultimate storage container with a glass melt containing highly radioactive waste material, comprising

a glass melting furnace having an opening through a wall of said furnace to permit access to the molten glass within the furnace,

an evacuated ultimate storage container adjacent said furnace,

a filler tube integrally connected to said storage container at one end, and



means for removably disposing the other end of said tube within said access opening,

said other end being sealed with a glass stopper which melts upon immersion in said molten glass.

4,341,548

N-(2-CYCLOHEXYLPHENYL)-N',N'-DIETHYL-ETHYLENE DIAMINE, ALGICIDAL COMPOSITIONS CONTAINING SAME, AND METHOD OF USE

Jaap van Gilse, and Gerard B. Paerels, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Netherlands

Continuation-in-part of Ser. No. 59,420, Jul. 20, 1979, Pat. No. 4,286,983. This application Jun. 5, 1981, Ser. No. 270,826
Claims priority, application Netherlands, Jul. 26, 1978, 7807908
Int. Cl.³ A01N *33/06;* C07C *87/62*
U.S. Cl. 71—67 **5 Claims**

1. N-(2-cyclohexylphenyl)-N',N'-diethyl-ethylenediamine and a salt thereof.

2. An algicidal composition comprising

an algicidally effective amount of N-(2-cyclohexylphenyl)-N',N'-diethyl-ethylenediamine or a salt thereof and

a solid or liquid inert material.

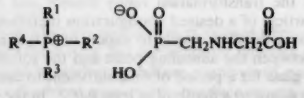
4,341,549

PHOSPHONIUM SALTS OF N-PHOSPHONOMETHYLGLYCINE AND THEIR USE AS HERBICIDES AND PLANT GROWTH REGULANTS

George B. Large, Orinda, and Lawrence L. Buren, Cupertino, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

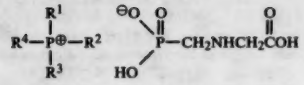
Filed Aug. 24, 1981, Ser. No. 295,345
Int. Cl.³ C07F *9/38;* A01N *57/00*
U.S. Cl. 71—86 **23 Claims**

1. A compound having the formula



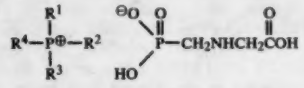
in which R^1, R^2, R^3, and R^4 are independently selected from the group consisting of C_1–C_{10} alkyl and phenyl.

13. A method of controlling undesirable vegetation comprising applying to the vegetation in postemergent state an herbicidal composition comprising an herbicidally effective amount of a compound having the formula



in which R^1, R^2, R^3, and R^4 are independently selected from the group consisting of C_1–C_{10} alkyl and phenyl, and an inert diluent carrier.

19. A method of regulating the natural growth or development of plants which comprises applying to said plants a regulating, nonlethal amount of a compound having the formula



in which R^1, R^2, R^3, and R^4 are independently selected from the group consisting of C_1–C_{10} alkyl and phenyl, and an inert diluent carrier.

4,341,550

HERBICIDE COMPOSITIONS

Ferenc M. Pallos, Walnut Creek; Mervin E. Brokke, Moraga, and Duane R. Arneklev, Sunnyvale, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 930,967, Aug. 4, 1978, Pat. No. 4,269,618, which is a continuation-in-part of Ser. No. 134,868, Apr. 6, 1971, abandoned. This application Jul. 9, 1979, Ser. No. 55,578

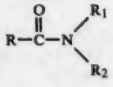
Int. Cl.³ A01N *43/00*

U.S. Cl. 71—88 **9 Claims**

1. A herbicidal composition consisting essentially of

(a) an active herbicidal thiolcarbamate compound; and

(b) an antidotally effective amount of an antidote compound therefor corresponding to the formula



R is haloalkyl containing from 1 to 6 carbon atoms, inclusive; R_1 and R_2 are taken together with the nitrogen to form an azepinyl group which may contain from 6–8 carbon atoms, inclusive.

4,341,551

1,2,3,-THIADIAZOLE-5-CARBOXYLIC ACID DERIVATIVES

Hans-Rudolf Krüger; Friedrich Arndt; Dietrich Baumert, and Reinhart Rusch, all of Berlin, Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

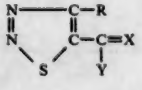
Filed Mar. 5, 1980, Ser. No. 127,496

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1979, 2909991

Int. Cl.³ A01N *43/82*; C07D *285/06, 417/06*

U.S. Cl. 71—90 **93 Claims**

1. 1,2,3-Thiadiazole-5-carboxylic acid compounds of the general formula



wherein

R is hydrogen or methyl,

y is chloro, amino, methylamino, ethylamino, propylamino, methylpropylamino, isopropylamino, 1,1-dimethylpropylamino, 1,2,2-trimethylpropylamino, butylamino, tert.butylamino, 3-methylbutylamino, 1,3-dimethylbutylamino, 1,1,3,3-tetramethylbutylamino, N,N-dimethylamino, N,N-diethylamino, N,N-diisopropylamino, N,N-dipropylamino, N,N-dibutylamino, N,N-diisobutylamino, N,N-dihexylamino, N-methyl-N-butylamino, N-ethyl-N-propylamino, N-ethyl-N-isopropylamino, N-ethyl-N-butylamino, allylamino, N,N-diallylamino, cyclohexylamino, N-methyl-N-cyclohexylamino, N-ethyl-N-cyclohexylamino, N-allyl-N-cyclohexylamino, phenylamino, methylphenylamino, dimethylphenylamino, halogenophenylamino, dichlorophenylamino, chloromethylphenylamino, nitrophenylamino, N-phenyl-N-methyl-amino, N,N-diphenylamino, cyclohexylmethylamino, benzylamino, N,N-tetramethylenamino, N,N-pentamethylenamino, imidazolyl-1,1,2,4-triazolyl-1, methylmercapto, ethylmercapto, phenylmercapto, methylphenylmercapto, benzylmercapto or chlorobenzylmercapto and X is methylimino, phenylimino, methylphenylimino, dimethylphenylimino, halogenophenylimino, dihalogenophenylimino, chloromethylphenylimino, benzylimino, halogenobenzylimino, or cyclohexylmethylimino, or an acid addition salt thereof.

90. A herbicide and plant growth (controlling) regulating agent comprising (at least a small quantity) an effective amount of a 1,2,3-thiadiazole-5-carboxylic acid derivative of claim **1** in admixture with an inert carrier.

91. A fungicide comprising (at least a small quantity) an effective amount of a 1,2,3-thiadiazole-5-carboxylic acid derivative of claim **1** in admixture with an inert carrier.

4,341,552

GRANULAR PESTICIDAL COMPOSITION AND METHOD OF PREPARING SAME

Willem de Lange, Weesp, Netherlands, assignor to Duphar International Research B.V., Netherlands

Continuation of Ser. No. 58,214, Jul. 16, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,442

Claims priority, application Netherlands, Jul. 26, 1978, 7807907

Int. Cl.³ A01N *37/34*

U.S. Cl. 71—105 **7 Claims**

1. A granular pesticidal composition wherein each granule comprises:

(A) a core comprising a herbicidally effective amount of a herbicide having a steam distillation constant in excess of 1 and a finely divided solid inert carrier for said herbicide, and

(B) a layer surrounding said core, said layer comprising silicon dioxide, the particles of which are provided with mono-, di-, and/or trialkylsilyl groups at their surface.

4,341,553

METHOD OF, AND CUPOLA FURNACE FOR, THE INTRODUCTION OF TREATMENT AGENTS INTO CUPOLA IRON MELTS

Karl Immekus, Kaarst, Fed. Rep. of Germany, assignor to Gesellschaft für Hüttenwerksanlagen mbH, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,696

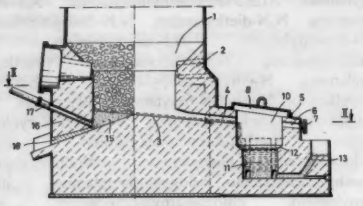
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932235

Int. Cl.³ C22C *33/08*

U.S. Cl. 75—53 **7 Claims**

1. A method for introducing treating agents into a melt in a cupola furnace having tapping ducts and an obliquely extend-

ing furnace floor comprising introducing the treating agent, under reducing atmosphere, into an iron sump situated in a



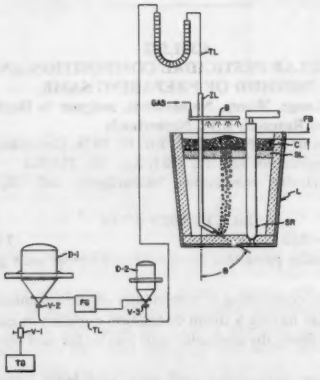
depression in the furnace floor and being directly connected by said floor with at least one tapping duct.

4,341,554

PROCESS FOR DESULFURIZING STEEL

Peter J. Koros, Pittsburgh, Pa., and Robert G. Petrushka, Parma, Ohio, assignors to Jones & Laughlin Steel Incorporated, Pittsburgh, Pa.

Filed Apr. 2, 1981, Ser. No. 250,328
Int. Cl.³ C21C *7/02*
U.S. Cl. 75—58 **8 Claims**



1. In a process for desulfurizing steel melt which includes the steps of:

(a) covering said melt with a synthetic slag layer;

(b) injecting powdered lime into said melt; and

(c) adding a desulfurizing reactant agent which vaporizes under the pressure and temperature conditions within said melt;

the improvement characterized by the steps of:

(d) adding particulate lime to cover said synthetic slag, said particulate lime being in a form and size such that substantially 100% will be retained on a number 80 sieve

(e) conducting step (b) after step (d) and permitting the powdered lime to rise to the surface of said melt and form together with said pebble lime a crust which deters entry of ambient air into said melt; and

(f) adding the agent of step (c) by simultaneously extruding into said melt from separate pressurized dispensing vessels (1) powdered lime and (2) said agent.

4,341,555

HIGH STRENGTH AUSTENITIC STAINLESS STEEL EXHIBITING FREEDOM FROM EMBRITTLEMENT

Joseph A. Douthett, Monroe, and Harry Tanczyn, Middletown, both of Ohio, assignors to Armco Inc., Middletown, Ohio

Filed Mar. 31, 1980, Ser. No. 135,692
Int. Cl.³ C22C *38/44, 38/48, 38/50, 38/58*
U.S. Cl. 75—128 A **6 Claims**

1. An austenitic stainless steel exhibiting high strength, good hot workability, good resistance against intergranular, pitting and crevice corrosion, and freedom from embrittlement both in the cold-worked and stress-relieved condition, and in the heat affected zone of weldments, said steel consisting essentially of, in weight percent, 0.06% maximum carbon, about 0.2% to 2.5% manganese, about 21.5% to 24.5% chromium, above 12% to about 16% nickel, about 0.20% to about 0.35% nitrogen, about 0.4% to about 0.7% silicon, about 2% to about 4% molybdenum, about 0.06% maximum phosphorus, about 0.04% maximum sulfur, up to about 0.6% columbium, with residual columbium when carbon is less than about 0.04% and columbium ranging from about 0.1% to 0.6% when carbon exceeds about 0.04%, and balance essentially iron.

4,341,556

MATERIAL FOR ELECTRICAL CONTACTS

Wolfgang Bohm, Alzenau; Roger Wolmer, Frankfurt; Andreas Szulczyk, Linsengericht, and Willi Malikowski, Aschaffenburg, all of Fed. Rep. of Germany, assignors to Degussa - Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Apr. 30, 1981, Ser. No. 259,197
Claims priority, application Fed. Rep. of Germany, May 7, 1980, 3017424
Int. Cl.³ C22C *5/06*; H01B *1/02*
U.S. Cl. 75—173 A **4 Claims**

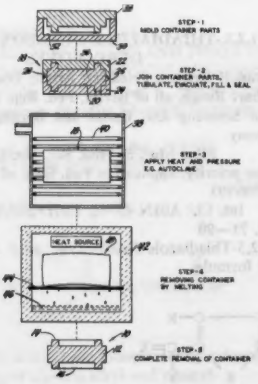
1. A material suitable for electrical contacts consisting essentially of silver containing 5 to 20 weight % tin oxide, 0.05 to 5 weight % tungsten oxide and 0.1 to 5 weight % bismuth oxide.

4,341,557

METHOD OF HOT CONSOLIDATING POWDER WITH A RECYCLABLE CONTAINER MATERIAL

James R. Lizenby, Traverse City, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Continuation-in-part of Ser. No. 73,627, Sep. 10, 1979, abandoned. This application Jul. 30, 1980, Ser. No. 173,648
Int. Cl.³ B22F *3/00*
U.S. Cl. 75—223 **13 Claims**



1. A method for hot consolidating powder of metallic and nonmetallic composition and combinations thereof by heat and pressure to form a densified article comprising the steps of;

forming a container having walls entirely surrounding a cavity therein from a material which is substantially fully dense and incompressible and which melts at a combination of temperature and time at that temperature which combination would not adversely affect the desired properties of the densified article, filling the cavity in the container with powder, applying heat and pressure to the container to densify the powder into the densified article, and melting the container into molten material to remove the container from the densified article.

4,341,558

METAL SURFACE COATING AGENT

Kuniji Yashiro, Kanagawa, and Yoshio Moriya, Yokohama, both of Japan, assignors to Hooker Chemicals & Plastics Corp., Warren, Mich.

Filed Feb. 27, 1981, Ser. No. 238,881
Int. Cl.³ C23F *7/14*
U.S. Cl. 106—14.12 **8 Claims**

1. An aqueous composition which consists essentially of at least one water soluble compound of zirconium or titanium, silica, and as the sole source of phosphate, an inositol 2–6 phosphate ester.

4,341,559

BINDERS BASED UPON SOLUTIONS OF ALKALI METAL SILICATES

Wolfgang Friedemann; Norbert Maak, both of Neuss, and Kurt Feulner, Essen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 6, 1980, Ser. No. 204,562
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 2946500
Int. Cl.³ B28B *7/34*
U.S. Cl. 106—38.35 **10 Claims**

1. A binder composition consisting essentially of (a) a concentrated aqueous solution of an alkali metal silicate solution having a molar ratio of SiO_2:Me_2O of from about 2.0:1 to 3.4:1, with Me signifying an alkali metal, and a solids content of from about 35 to 50 percent by weight, based upon the weight of the total alkali metal solution, and (b) from about 0.1 to 10 percent by weight, based on the weight of the total binder composition, of at least one reductively animated monosaccharide, disaccharide, or oligosaccharide selected from the group consisting of reaction products of a monosaccharide or reducing disaccharide or oligosaccharide with ammonia, a primary amine, or a secondary amine and formed under the action of hydrogen.

4,341,560

WATERPROOF GYPSUM MOLDED PRODUCT

Masumi Saito, Kobe; Eiichi Hirai, Takarazuka; Masao Endo, and Toru Nishino, both of Nishinomiya, all of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Kurashiki, Japan

Filed Sep. 26, 1980, Ser. No. 191,824
Claims priority, application Japan, Oct. 2, 1979, 54-127488
Int. Cl.³ C04B *11/14*
U.S. Cl. 106—87 **8 Claims**

1. A composition for a waterproof gypsum molded product which comprises a combination of the following essential components: (a) gypsum (b) alkaline metal alkylsiliconate or phenylsiliconate and (c) calcium hydroxide or calcium oxide, the amount of (c) being sufficient to counteract a decrease in strength of the molded product attributable to (b).

4,341,561

FOAMED INSULATING REFRACTORY

James M. Britt, Martinez, and Charles C. Logue, Augusta, both of Ga., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Apr. 22, 1981, Ser. No. 256,415
Int. Cl.³ C04B *21/02*
U.S. Cl. 106—87 **8 Claims**

1. A two-component foamed cellular refractory product having a density in the range of about 20 to about 120 lb/ft.^{3} produced from a mixture consisting of 15%–100% hydraulic cement, 0–85% fine grain inert filler, 0–85% aggregate, all on a dry weight basis, water, wherein the water is added to the dry mixture in an amount to attain a slurry viscosity of about 300 CPS to 3000 CPS and an acid selected from the group consisting of H_3PO_4, H_2SO_4, HF and HCl.

4,341,562

LIGHTWEIGHT AGGREGATE

Richard A. Ahlbeck, Toledo, Ohio, assignor to N-Viro Energy Systems, Ltd., Toledo, Ohio

Filed Mar. 21, 1980, Ser. No. 132,660
Int. Cl.³ C04B *7/02*
U.S. Cl. 106—97 **2 Claims**

1. The method of forming lightweight concrete which comprises mixing cement, pellets of cement kiln dust which have been subjected to a low thermal treatment at high humidity, and water to form a curable mass, and thereafter curing said mass.

4,341,563

PROTECTIVE COATING COMPOSITIONS

Kozo Kurihara; Toshio Fukazawa; Izuo Ichikawa; Yoshihiko Ikegami; Naohiko Fukiyama, and Masaru Ikeda, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Continuation of Ser. No. 961,559, Nov. 17, 1978, abandoned, which is a continuation-in-part of Ser. No. 834,848, Sep. 20, 1977, abandoned. This application May 8, 1980, Ser. No. 148,172
Int. Cl.³ A61K *9/30, 9/36, 9/42;* C08L *1/28*
U.S. Cl. 106—171 **13 Claims**

1. An aqueous protective coating composition which comprises dispersed fine particles of a hydrophobic material selected from the group consisting of a metal salt of a higher fatty acid, a higher fatty acid having a melting point of 40°–90° C., a wax having a melting point of 40°–90° C. and mixtures thereof of a water-soluble film base containing an amount effective to increase the hydrophobic properties of the film resulting from said aqueous protective coating composition of a surface active agent having a total HLB value of about 1.7 to 8.6.

4,341,564

CORROSION INHIBITIVE PIGMENT

Louis Schiffman, 1837 Merritt Rd., Abington, Pa. 19001

Filed Nov. 26, 1980, Ser. No. 210,556
Int. Cl.³ C04B *31/28;* C09C *1/34*
U.S. Cl. 106—302 **15 Claims**

1. The method of preparing a corrosion-inhibiting pigment which comprises reacting a hexavalent chromium compound in aqueous solution with a reducing agent under conditions effective to reduce 5 to 95% of the hexavalent chromium to lower valence state, dispersing in the reaction mixture containing at least about 20% chromium compounds by weight of said mixture, a water soluble or water dispersible polymeric film forming material; evaporating the resulting mixture to dryness at elevated temperature and pulverizing the dried product to pigment size range.

13. A corrosion-inhibiting pigment composition comprising as discrete particles chrome in hexavalent and partially reduced state enveloped in a polymeric film formed from at least one polymer selected from the group consisting of water soluble and water dispersible acrylic polymer compounds, poly-

acrylic acids, polyvinyl alcohols and hydroxy ethyl ethers of cellulose.

14. A corrosion-inhibiting pigment composition as defined in claim 13 wherein said chrome comprises 25 to 75% of unreduced hexavalent chromium compound and 75 to 25% of chromium compound in lower valent state.

15. A metal coating composition comprising as a vehicle a fast setting high molecular weight styrene-acrylic emulsion copolymer incorporating a chromium-chromate pigment as defined in claim 14.

4,341,565

LIQUID COLORANT COMPOSITION

Irvin W. Martenson, Brea, Calif., assignor to American Organics Corporation, Placentia, Calif.

Filed Sep. 26, 1980, Ser. No. 191,320
Int. Cl.³ C04B 31/40; C09C 1/56; C08K 3/04
U.S. Cl. 106—307 14 Claims

1. A stable liquid composition of suspended color bodies which consists essentially of:

solid, subdivided color pigment comprising from 10 to about 70 weight percent of said composition;

a liquid vehicle comprising from about 30 to 90 weight percent of said composition and comprising a plasticizer selected from the class consisting of esters of saturated mono- and di-basic alcohols having from 2 to about 20 carbons and a di- or tri-basic saturated aliphatic acid or aromatic acid having from 3 to about 12 carbons, or phosphoric acid; and

a gelling agent in an amount from 1 to about 5 percent of the weight of said liquid vehicle and comprising an organophilic, expanding lattice clay ion exchanged with alkyl quaternary ammonium ions.

3. The composition of claim 1 wherein said pigment is carbon black and is present in an amount from 12 to 15 percent of said composition.

9. The method of preparing a stable liquid suspension of pigments which comprises:

(a) admixing from 1 to about 5 weight percent of an organophilic, expanding lattice clay having its ion exchange sites occupied by mono- and poly-alkyl ammonium ions with a liquid plasticizer of a saturated mono- or di-basic alcohol having from 2 to about 20 carbons esterified with a di- or tri-basic, saturated aliphatic or aromatic acid having from 3 to about 12 carbons, or phosphoric acid;

(b) milling said mixture to form a pre-gel having a viscosity less than the desired final viscosity and from 1,000 to about 3,000 centipoise seconds Brookfield;

(c) blending a finely subdivided solid colorant into said pre-gel in sufficient proportions to provide aconcentration in said composition from 10 to about 70 weight percent, and

(d) subjecting the resulting blend to a high shear force to form a gelled suspension of said colorant having the desired viscosity.

4,341,566

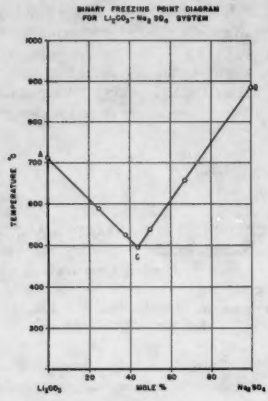
EUTECTIC MIXTURE AS A FLUX FOR GLASS MELTS

Wayne T. Barrett, Malvern, and Patrick M. Brown, Exton, both of Pa., assignors to Foote Mineral Co., Exton, Pa.

Filed Feb. 2, 1981, Ser. No. 230,520
Int. Cl.³ C04B 35/60; C09K 3/00; C03B 1/00
U.S. Cl. 106—313 15 Claims

1. An eutectic composition particularly useful as a flux in glass manufacture comprising about 56 mole percent lithium carbonate and about 44 mole percent sodium sulfate.

10. In the manufacture of glass wherein the solid raw materials in specified proportions are intimately mixed together and the mixture is converted at high temperatures to a homogeneous melt, the improvement which comprises including in the mixture as a flux an eutectic composition comprising about 56



mole percent lithium carbonate and about 44 mole percent sodium sulfate.

4,341,567

METHOD OF VAPOR DEGREASING

Ernest O. Roehl, Huntington Beach, Calif., assignor to Rho-Chem Corporation, Inglewood, Calif.

Continuation-in-part of Ser. No. 163,988, Jun. 30, 1980, Pat. No. 4,289,542. This application May 7, 1981, Ser. No. 257,578
Int. Cl.³ B08B 5/00
U.S. Cl. 134—11 14 Claims

1. In the method of vapor degreasing by contacting a contaminated article with vapors of a solvent consisting essentially of 1,1,1 trichloroethane, the improvement which comprises:

(a) adding a sufficient amount of methylene chloride to the solvent to reduce the initial boiling point of the resultant solvent blend to about 135° F., and

(b) continuing vapor degreasing operations with the solvent blend of step (a) at reflux temperatures until the acid acceptance value of the contaminated solvent blend is within the range of about 0.03 to 0.06.

8. In the method of vapor degreasing by contacting a contaminated article with the vapors of a solvent consisting essentially of trichloroethylene, the improvement which comprises:

(a) adding a sufficient amount of methylene chloride to the solvent to reduce the initial boiling point of the resultant solvent blend to about 120° F.

(b) continuing vapor degreasing operations with the solvent blend of step (a) at reflux temperatures until the acid acceptance value of the contaminated solvent blend is within the range of about 0.03 to 0.06.

4,341,568

METHOD AND APPARATUS FOR WASHING OBJECTS

Kim S. Christensen, Redmond, Wash., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 27, 1980, Ser. No. 163,602
Int. Cl.³ B08B 3/02, 5/04
U.S. Cl. 134—21 11 Claims

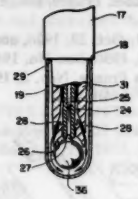
1. A device for washing an object within a receptacle comprising:

an end portion introducible into and cooperative with said receptacle in such a way as to define a substantially enclosed space containing said object;

said end portion including a tip surface adjacent said object;

means, adjacent said end portion, for introducing a fluid into said substantially enclosed space; and

means, contiguous with said tip surface, for aspirating said fluid from said substantially enclosed space;



said object being movable between said receptacle and said tip surface.

4,341,569

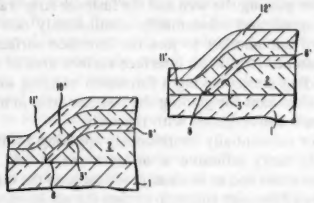
SEMICONDUCTOR ON INSULATOR LASER PROCESS

Giora Yaron; Eliyahou Harari, both of Irvine; Samuel T. Wang, Mission Viejo, and LaVerne D. Hess, Thousand Oaks, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 60,081, Jul. 24, 1979, abandoned. This application Jul. 8, 1980, Ser. No. 166,881

Int. Cl.³ H01L *21/263;* B05D *3/06*

U.S. Cl. 148—1.5 31 Claims



1. A method for increasing the channel mobility of transistors formed in epitaxial silicon islands over a sapphire substrate and for achieving improved step coverage by conductors deposited over said islands, comprising:

forming a layer of epitaxial silicon over a sapphire substrate;

defining a plurality of epitaxial silicon islands in said silicon layer;

exposing said islands to a beam of energy of sufficient magnitude;

placing a first insulating layer over said silicon islands;

placing and defining a polycrystalline conductor over said first insulating layer;

ion implanting said silicon islands and said polycrystalline conductor;

placing a second insulating layer over said conductor and said first insulating layer;

opening contacts through said second insulating layer; and,

placing and defining a metal conductor over said second insulating layer.

4,341,570

PROCESS FOR PRODUCING AN INJECTION LASER AND LASER OBTAINED BY THIS PROCESS

Jean Landreau, 107 Avenue de Verdun, 92130 Issy les Moulineaux; Philippe Delpech, 37 rue Louise Michel, 94800 Villejuif, and Jean-Claude Bouley, 35 Avenue du Docteur Durand, 94110 Arcueil, all of France

Filed Sep. 3, 1980, Ser. No. 183,730

Claims priority, application France, Sep. 11, 1979, 79 22650

Int. Cl.³ H01S *3/00*

U.S. Cl. 148—1.5 4 Claims

1. A process for producing an injection laser with a double heterostructure incorporating on a substrate a first confinement layer, an active layer, a second confinement layer and a contact layer, wherein:

(A) a conventional double heterostructure is formed (n-type substrate, n-type first confinement layer, active layer, second confinement layer and P^+-type contact layer), but the active layer is of the weakly doped n-type;

(B) a masking layer is deposited on the contact layer and its composition is similar to that of the confinement layers;

(C) the latter layer is chemically etched so as to only leave behind a masking mesa;

(D) zinc diffusion is performed using said mesa as the mask, the diffusion time being sufficiently great for the diffusion to affect the active zone;

(E) there is proton bombardment of the structure by once again using the mesa as the mask, the bombarded zone also extending beyond the active zone;

(F) the mesa is eliminated.

4,341,571

METHOD OF MAKING PLANAR DEVICES BY DIRECT IMPLANTATION INTO SUBSTRATE USING PHOTORESIST MASK

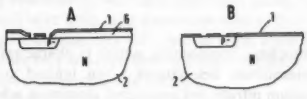
Ludwig Hiss, Endingen, and Ulrich Waldvogel, Sexau, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Oct. 29, 1980, Ser. No. 201,884

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1979, 2945854

Int. Cl.³ H01L *21/26, 21/265*

U.S. Cl. 148—1.5 2 Claims



1. A method for making with a reduced failure rate a semiconductor device having a plurality of differently doped regions in a semiconductor substrate, the method comprising:

exposing a surface of said substrate by an oxidizing plasma etching operation performed under predetermined conditions wherein the oxide layer formed by said etching operation is minimized;

forming on said exposed surface a photoresist mask having at least one opening therethrough;

implanting ions in an area of said substrate through said opening;

repeating said exposing, forming and implanting steps to implant ions in a different area of said substrate; and

diffusing said implanted ions only after the last said ion implantation step by heating said substrate.

4,341,572

METHOD FOR PRODUCING NB_3SN SUPERCONDUCTORS

Kyoji Tachikawa, Tokyo; Kazumasa Togano, and Takao Takeuchi, both of Sakura, all of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Nov. 10, 1980, Ser. No. 205,243

Claims priority, application Japan, Nov. 12, 1979, 54/145459

Int. Cl.³ H01L *39/00;* C22C *27/02*

U.S. Cl. 148—11.5 F 2 Claims

1. In a method for producing a Nb_3Sn superconductor which comprises drawing a composite having a core of a Nb-Hf alloy containing 0.1 to 30 atomic % of Hf and a sheath containing Cu and Sn, and heat-treating the composite to form a Nb_3Sn layer between the core and the sheath; the improvement wherein the sheath is formed of a Cu-Ga alloy containing not more than 20 atomic % of Ga, a Cu-Al alloy containing not

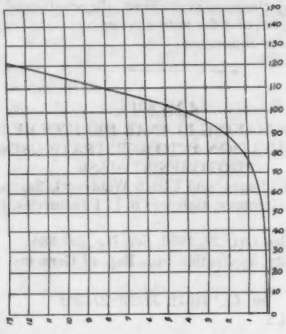
more than 20 atomic % of Al, a Cu-Ga-Sn alloy containing not more than 6 atomic % of Sn and not more than 20 atomic % of Ga or a Cu-Al-Sn alloy containing not more than 6 atomic % of Sn and not more than 20 atomic % of Al; and after the drawing, coating a Sn film onto the surface of the sheath, and then heat-treating the resulting product.

4,341,573

COMPOSITIONS FOR PULSATING FLARES

David W. Donoho, Baltimore, Md., assignor to Pulsar Laboratories, Inc., Baltimore, Md.

Filed Sep. 5, 1980, Ser. No. 184,516
Int. Cl.³ C06B *33/06*
U.S. Cl. 149—42 **8 Claims**



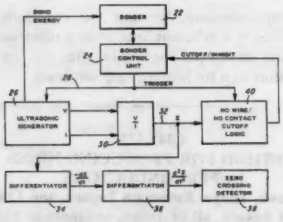
1. A pyrotechnic composition which is characterized by a series of intermittent detonations when ignited comprising sulfur, potassium nitrate and powdered aluminum wherein the range in ratio by weight of the sulfur to the total of the potassium nitrate and aluminum is between approximately 5:4 and 13:4.

4,341,574

ULTRASONIC BOND ENERGY MONITOR

James L. Landes, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 25, 1980, Ser. No. 180,796
Int. Cl.³ B23K *1/06*; B29C *27/08*
U.S. Cl. 156—64 **6 Claims**



1. A method for optimizing the bonding of materials by ultrasonic energy radiating from a transducer, comprising the steps of:

monitoring the ultrasonic voltage and current in said transducer;

generating a signal corresponding to the impedance of said transducer as a function of said voltage and said current; and

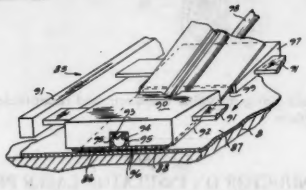
terminating said bonding process when the second derivative of said impedance signal with respect to time reaches a predetermined value.

4,341,575

MEANS FOR JOINING FLEXIBLE FASTENER STRIPS TO FILM

Andre M. Herz, Nesles-la-Vallee, France, assignor to Minigrip, Inc., Orangeburg, N.Y.

Division of Ser. No. 737,141, Oct. 29, 1976, abandoned. This application Oct. 14, 1980, Ser. No. 196,533
Claims priority, application France, Nov. 3, 1975, 75 33593
Int. Cl.³ A44B *19/00*
U.S. Cl. 156—66 **18 Claims**



1. Apparatus for attaching to a prefabricated flexible web a first prefabricated flexible separable fastener strip having an interlocking profile projecting away from an interface surface area of the strip and the profile being adapted for interlocking with a complementary second flexible separable fastener profile, comprising:

means for guiding the web and the fastener strip travelling at high speed and substantially continuously convergently toward one another to join the interface surface area of the fastener strip to an interface surface area of said web;

said guiding means having a formation utilizing said profile as guide means for guiding the fastener strip in movement into said convergence with the web;

means for substantially continuously applying a thin layer of quickly tacky adhesive to at least one of said interface surface areas and as close as practicable to the convergent joining of the web and strip so that the adhesive will reach the joining while tacky;

and said guiding means pressing said strip and said web together and thereby effecting attachment of the interface surface areas to one another by means of the adhesive layer while the web and fastener strip continue travelling jointly at said high speed.

4,341,576

FABRICATING LAMINATED SAFETY GLASS WITHOUT AN AUTOCLAVE

Charles W. Lewis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 1, 1981, Ser. No. 269,111
Int. Cl.³ B32B *31/12, 17/10*
U.S. Cl. 156—106 **10 Claims**

1. A method of fabricating a laminated glass window comprising a pair of glass sheets and a plasticized sheet of interlayer material having embossed major surfaces comprising:

(a) applying to the major surfaces of said sheet of plasticized interlayer material an excess of liquid plasticizer,

(b) assembling said plasticized sheet between a pair of glass sheets to form an assembly having said excess of liquid plasticizer in contact with the major surfaces of said plasticized sheet,

(c) soaking said major surfaces of said plasticized sheet with said excess plasticizer at room temperature for sufficient time for the applied plasticizer to soften said embossed major surfaces, but insufficient to normalize the plasticizer concentration throughout the thickness of said plasticized sheet, and

(d) compressing said assembly at a superatmospheric pressure of not more than two atmospheres to remove excess plasticizer and heating said assembly while so compressed to a temperature range above room temperature and

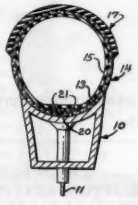
below the temperature at which said plasticizer develops a volatile product to laminate said sheets completely to one another while maintaining the surfaces of said glass sheets of said assembly that do not form interfacial surfaces with said plasticized sheet free of exposure with said plasticizer during the performance of said method.

4,341,577

VEHICLE TIRE AND METHOD OF MANUFACTURE

Garret K. Vandenburgh, 1008 Grove St., Winnetka, Ill. 60093

Filed Apr. 11, 1977, Ser. No. 786,068
Int. Cl.[3] B29H *15/00*
U.S. Cl. 156—121 9 Claims



1. In a method of manufacturing a high performance tire which includes a casing encompassing an inner tube inflated to a pressure of at least seventy-five pounds per square inch, said casing being formed from a blank of fabric which fabric has two groups of threads running completely across the blank in two directions respectively, which directions are transverse to each other, and said blank has ends and elongated sides, and wherein said sides are sewn together and said ends are sewn together to form said blank into a toroid about the tube, the improvement comprising the step of:

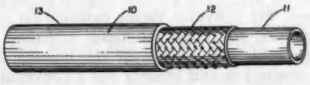
cutting said blank from fabric consisting essentially of said threads and so that the threads of one of said groups are at an angle of approximately forty-five degrees to said sides.

4,341,578

METHOD OF HOSE PRODUCTION

Michael A. Chermak; Anil H. Chudgar, and William J. Kronschnabel, all of Manitowoc, Wis., assignors to Gould Inc., Rolling Meadows, Ill.

Continuation of Ser. No. 961,338, Nov. 16, 1978, abandoned. This application Jan. 30, 1981, Ser. No. 230,123
Int. Cl.[3] B65H *81/00*
U.S. Cl. 156—149 8 Claims



1. The method of continuous forming a hose product comprising the steps of:

providing a single layer, thermoplastic, load bearing, core tube,

applying an intersticed metallic reinforcement about said core tube;

subsequently heating said core tube only in selected portions adjacent the outer surface thereof to soften said portions for migration into and above said interstices wherein said heating is done by heating of the metallic reinforcement by an induction generator thereby providing for only a localized heating effect; and

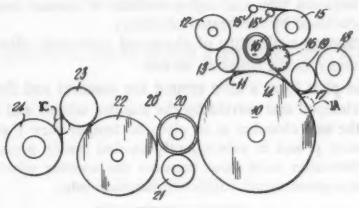
cooling said portions to form a mechanical interlock between said core tube and said reinforcement, said mechanical interlock being the sole means bonding said reinforcement to said core tube.

4,341,579

WIRE REINFORCED CORRUGATED BOARD AND METHOD AND APPARATUS FOR MAKING SAME

Marc A. Chavannes, 4044 Roberts Point Ave., Sarasota, Fla. 33581

Continuation of Ser. No. 913,242, Jun. 6, 1978, Pat. No. 4,228,209, which is a continuation of Ser. No. 771,993, Feb. 25, 1977, abandoned, which is a continuation of Ser. No. 551,978, Feb. 21, 1975, abandoned. This application Sep. 24, 1980, Ser. No. 190,189
The portion of the term of this patent subsequent to Oct. 14, 1997, has been disclaimed.
Int. Cl.[3] B32B *29/02;* B31F *1/24*
U.S. Cl. 156—166 9 Claims



1. The method of forming a wire grid comprising the steps of feeding successive transversely disposed wires onto a drum and retaining them in spaced parallel relationship, feeding a plurality of spaced parallel longitudinally disposed wires into overlying relationship with said transverse wires, joining each longitudinal wire with each transverse wire to form a self-supporting grid, corrugating said grid to form crest portions on both sides thereof and then sealing a layer of plastic to the crest portions on at least one side thereof.

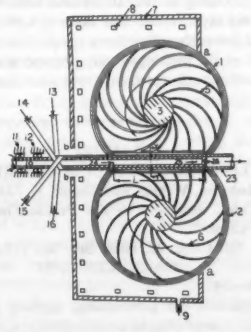
5. The method of forming a wire mesh according to claim 1 wherein said longitudinal and transverse wires are coated with a plastic and said wires are heated to cause the plastic to adhere the wires, one to the others, at each intersection of the longitudinal and transverse sets of wires.

4,341,580

METHOD OF FORMING AN ELONGATED COMPOSITE LAMINATE TUBE

Nazeer Ahmed, and Myrna M. Ahmed, both of 17 Wedgewood Dr., Danbury, Conn. 06810

Filed Jan. 27, 1981, Ser. No. 228,997
Int. Cl.[3] B61H *81/00*
U.S. Cl. 156—190 2 Claims



1. A method of forming an elongated composite laminate tube, the method consisting of

providing a pair of cooperatively rotating annular wheels

each of which has a rim built up of a plurality of sheets and connected to a rotating shaft by means of flexible means,

providing a circumferential groove on the rim of each of the said annular wheels,

temporarily deforming said wheels radially against each other so as to cause a contact length L and pressure p between them and so that the said grooves cooperate to form a closed orifice,

providing a rotating mandrel and inserting said mandrel into the orifice formed between the annular wheels along their contact length so that the radial clearance between the mandrel and said orifice is substantially equal to the thickness of the composite tube to be formed,

locating said annular wheels in a heated chamber whose temperature is held at an elevated temperature T so that between fifty and eighty percent of contact length L is enclosed by the heated chamber,

wrapping a plurality of elongated composite plies around said rotating mandrel, so that

said plies form a tube around the mandrel and the tube is clamped and carried by the annular wheels and cured in the said chamber at an elevated temperature T and pressure p and is subsequently cooled under pressure and thereafter exits from between the annular wheels as an elongated cured composite laminate tube.

4,341,581

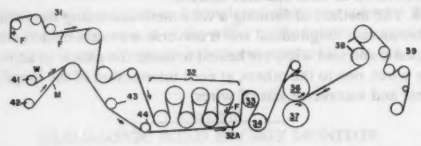
METHOD OF MAKING LEATHERLIKE MATERIALS (B)

Frank P. Civardi, Wayne, and Milan J. Getting, Nutley, both of N.J., assignors to Inmont Corporation, Clifton, N.J.

Continuation-in-part of Ser. No. 891,834, Mar. 30, 1978, abandoned. This application May 23, 1979, Ser. No. 41,780

Int. Cl.³ B32B *27/40*

U.S. Cl. 156—209 **18 Claims**



1. Process for imparting a grain pattern to a continuous sheet material having a layer of microporous polyurethane at least about 10 mils thick which comprises passing said sheet material continuously to the nip between a roll having a hot grain-embossing surface having hot grain-embossing projections and another roll, compressing said layer in said nip and thereby forcing said projections into said layer, passing said sheet material out of said nip and maintaining said sheet material on said grain embossing surface to transfer heat from said projections into said layer while said layer is substantially uncompressed, said hot surface being at a temperature which is within about 15° C. of the melting-sticking temperature of said layer, and then continuously removing said sheet material from said hot roll.

4,341,582

LOAD-LOCK VACUUM CHAMBER

Wayne E. Kohman, Wilton, and Joseph E. Maleri, Bridgeport, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Dec. 22, 1980, Ser. No. 219,060

Int. Cl.³ C23F *1/02*

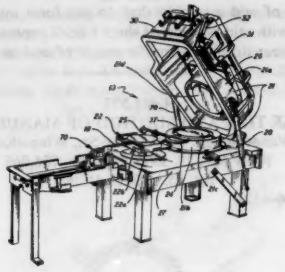
U.S. Cl. 156—345 **12 Claims**

1. An apparatus for pretreating, etching and stripping a silicon wafer, comprising in combination;

a first chamber for treating a wafer,

a second chamber for treating a wafer disposed within said first chamber,

first means for inserting or removing a wafer from said first chamber,



second means for transferring wafers between said first and second chambers.

4,341,583

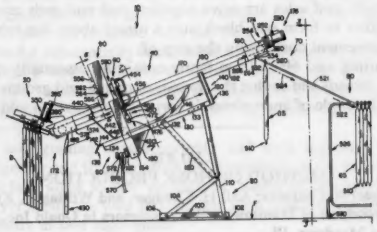
GARMENT BAG BOTTOM SEALING MACHINE FOR THE GARMENT MANUFACTURING AND DRY CLEANING INDUSTRIES

Karl E. Schwarz, 714 Tifft Ave., Horseheads, N.Y. 14845

Filed Aug. 27, 1980, Ser. No. 181,800

Int. Cl.³ G05G *15/00*; B29C *27/02*; B65B *51/10*

U.S. Cl. 156—359 **36 Claims**



1. A sealing means for sealing garment bags in a garment dry cleaning or garment manufacturing operation comprising:

a support means;

a garment bag supporting ramp mounted on said support means for supporting garment bags to be sealed;

a garment bag conveyor means mounted on said support means, said bag conveyor means including a garment hanger guide rail, a conveyor belt housing, a conveyor belt mounted in said housing and a conveyor belt drive means, said conveyor belt being formed by a plurality of interconnected links with each link having a body with a leading edge and a trailing portion with the leading edge of one link body being connected to the trailing portion of an adjacent link and being offset from that trailing portion to define a step between such connected links, said belt link leading edges each cooperating with said guide rail so that said step and said guide rail form a hanger accommodating pocket;

a garment hanger feeder means mounted on said belt housing to receive hanger supported bagged garments in a dry cleaning or garment manufacturing operation and feed such hanger supported garments to said conveyor belt in a manner such that each of the hangers is received in one of said hanger accommodating pockets to directly contact one of said links to be moved along said guide rail by said conveyor belt;

garment bag sealer means mounted on said support means

and sealing each garment bag as such each garment bag is conveyed through said sealer means by said conveyor means; and

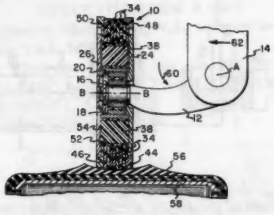
discharge means mounted on said belt housing for discharging sealed garment bags from said conveyor belt.

4,341,584

MULTIPLE DISC STITCHER

Krystian G. Czernichowsky, Ettelbruck, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 11, 1981, Ser. No. 262,135
Int. Cl.[3] B29H *17/18*; B21B *13/02, 31/08*
U.S. Cl. 156—412 **12 Claims**



1. A multiple disc stitcher rotatable about a stitcher axis for use in building tires comprising a plurality of disc members positioned generally in concentric laminated relationship about said axis, said disc members having a central opening, support means extending axially through said opening providing a single continuous beam support, each of said disc members being independently rotatable and slidable relative to adjacent disc members, said support means including a plurality of generally cylindrical elastic members spaced circumferentially around an axially extending support member, each of said elastic members extending through said central opening to resiliently support said disc members while permitting radial displacement relative to said support member, and each of said elastic members having a wear-resistant surface with a low resistance to sliding of said disc members on said elastic members to reduce the wear when different disc members are rotated at different speeds relative to said elastic members.

8. A multiple disc stitcher rotatable about a stitcher axis for use in building tires comprising a plurality of disc members positioned generally in concentric laminated relationship about said axis and having a central opening, support means extending axially through said opening providing a single continuous beam support, each of said disc members being independently rotatable and slidable relative to adjacent disc members, said support means including an axially extending support member and a plurality of generally cylindrical elastic members spaced circumferentially around said support member, each of said elastic members extending through said central opening to resiliently support said disc members while permitting radial displacement relative to said support member, and said support member having radially extending arms spaced apart circumferentially and extending between adjacent cylindrical elastic members for spacing and supporting said elastic members.

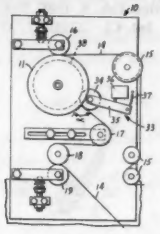
4,341,585

DEVICES FOR IMPARTING CURL TO TAPES

Thomas W. Seabold, Saint Paul; Richard A. Patterson, Woodbury, and Richard P. de Neui, Lake Elmo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 121,716, Feb. 15, 1980, abandoned. This application Sep. 19, 1980, Ser. No. 188,672
Int. Cl.[3] B65H *17/28*
U.S. Cl. 156—443 **12 Claims**

1. A device for curling tape comprising a backing and an adhesive layer, said device comprising a first roller having grooves on the peripheral surface of the roller and a second roller which provides means whereby said tape is deformed



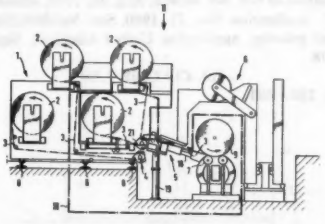
into said grooves to impart at least a temporary curl to said tape.

4,341,586

ARRANGEMENT FOR WRAPPER FEEDING TO BIG PAPER ROLLS

Pauli Koutonen, Järvenpää, Finland, assignor to Oy Wartsila Ab, Helsinki, Finland

Filed Oct. 9, 1980, Ser. No. 195,391
Claims priority, application Finland, Oct. 19, 1979, 793239
Int. Cl.[3] B32B *3100*
U.S. Cl. 156—518 **6 Claims**



1. An arrangement for selecting and feeding a wrapper to a big paper roll or the like, said arrangement comprising:

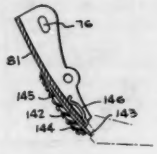
a storage unit containing a plurality of wrapper rolls of different axial length and including separate feeding means for each wrapper in said storage unit;

said feeding means being arranged in a substantially vertical line and comprising each, as known per se, at least one wrapper feeding drive roll, said feeding means being arranged to operate as the main wrapper pulling and feeding devices of said arrangement;

said arrangement further comprising a guiding unit receiving a selected wrapper and being provided with means for transversely cutting said wrapper;

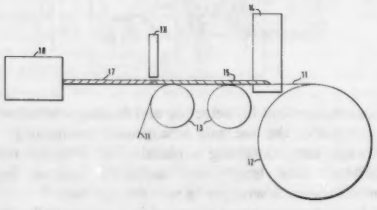
said guiding unit being movable mainly vertically and arranged to be selectively positioned in front of and close to any of said feeding means for automatically guiding a selected wrapper from said storage unit to a roll wrapping station; thereby to avoid threading of a new wrapper end when changing to another selected wrapper from said storage unit.

4,341,587
TAPE DISPENSER
James L. Regan, 2027 Lakeview Ter., Fairbanks, Ak. 99701
Division of Ser. No. 110,226, Jan. 7, 1980, Pat. No. 4,253,905.
This application Feb. 9, 1980, Ser. No. 214,682
Int. Cl.³ B32B *31/18*
U.S. Cl. 156—523 2 Claims



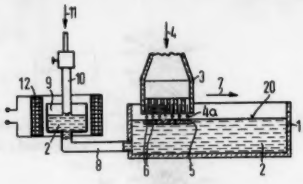
1. A tape positioning and severing blade means removably positionable on a tape dispenser comprising a blade member having an outer face terminating along a transverse cutter edge and cushion means attached to the blade member and positioned on the outer face at a location closely adjacent the transverse cutter edge and wherein said blade means includes spring means attached to said blade member adjacent said transverse cutter edge for permitting said blade member to be removably mounted on a blade-like support member of the tape dispenser.

4,341,588
SEMICONDUCTOR PROCESSING
Henley F. Sterling, Great Dunmow, England, assignor to ITT Industries, Inc., New York, N.Y.
Continuation of Ser. No. 66,961, Aug. 17, 1979, abandoned. This application Nov. 21, 1980, Ser. No. 209,234
Claims priority, application United Kingdom, Sep. 7, 1978, 35942/78
Int. Cl.³ C30B *1/04*
U.S. Cl. 156—601 16 Claims



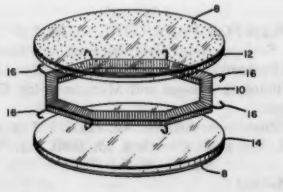
1. In a process for the continuous manufacture of integrated circuits, the steps of:
depositing a self-supporting layer of amorphous silicon material from a vapor phase on a continuously moving substrate for joint movement therewith,
separating the self-supporting layer of amorphous silicon material from the substrate,
heating increments of said separated layer of amorphous silicon material during continued movement thereof to a temperature sufficient to permit crystallization of the silicon material into a single crystal semiconductor, and
effecting cooling of said increments at a rate inducive of crystallization of said silicon material into a single crystal semiconductor.

4,341,589
METHOD FOR PRODUCING LARGE SURFACE PLATE OR DISC-SHAPED SI CRYSTALS WITH COLUMNAR STRUCTURE
Josef Grabmaier, Berg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Mar. 20, 1980, Ser. No. 132,115
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1979, 2914506
Int. Cl.³ C30B *29/06*
U.S. Cl. 156—606 6 Claims



1. In a method of producing a relatively large surface silicon crystal plate-shaped body having a columnar crystalline structure and which is useful for manufacture of solar cells, said body being produced through a directional solidification of molten silicon in a silicon melting tank, the improvement comprising:
arranging a cooling gas system comprised of a controllable cooling gas source interconnected with a plurality of gas nozzles in working relation with said silicon melting tank;
positioning said gas nozzles a relatively short distance above a silicon melt surface in said melting tank and arranging said nozzles relative to one another so that spacing between one nozzle center and an adjacent nozzle center corresponds to the diameter of crystallites forming the desired columnar structure;
directing a plurality of cooling gas streams from said cooling gas source through said nozzles and onto the silicon melt surface below such nozzles for a period of time sufficient to attain a desired thickness for said silicon body whereby a substantial spontaneous seed crystal formation occurs in the melt surface in the region thereof lying directly opposite such streams and the area of the melt surface below such streams solidifies about such seed crystals to form columnar crystallite structure; and
removing the thus-formed silicon body from said melt surface.

4,341,590
SINGLE SURFACE LPE CRYSTAL GROWTH
Gary L. Nelson, Apple Valley, and William A. Harvey, Minneapolis, both of Minn., assignors to Sperry Corporation, New York, N.Y.
Filed Apr. 27, 1981, Ser. No. 257,830
Int. Cl.³ C30B *19/12*
U.S. Cl. 156—624 10 Claims



1. In a liquid phase epitaxial process for growing a crystal-

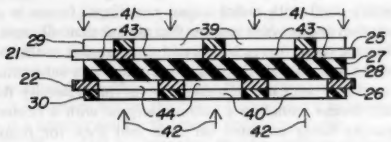
line film upon a supporting crystalline substrate by immersing said substrate in a melt containing a nutrient and a flux, the improvement comprising the inclusion of a step therein prior to immersion of:

assembling means for entrapping an air bubble between a first and second substrate, so that each of said substrates have an exposed upper and lower surface, whereby upon immersion of said assembly into said melt said crystalline film is grown primarily upon the exposed surfaces of said first and second substrates, the growth upon the interior surfaces occurring in only those areas not exposed the entrapped air bubble.

4,341,591
METHOD OF FABRICATING A COLOR-SELECTION STRUCTURE FOR A CRT

Donald J. Tamutus, Mercerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 8, 1981, Ser. No. 252,250
Int. Cl.³ B44C *1/22;* **C03C** *15/00, 25/06;* **C23F** *1/02*
U.S. Cl. 156—630 **4 Claims**



1. A method of fabricating a color-selection structure for a cathode-ray tube comprising

A. providing a blank laminate consisting essentially of a positive-acting photosolubilizable central insulator layer, first and second etchable metal layers adhered to opposite major surfaces of said insulator layer, and first and second etch-resistant stencils contacting major surfaces of said first and second metal layers respectively, said stencils having different, related open areas therethrough which leave selected portions of said metal layers unprotected,

B. etching through said first metal layer in said selected portions of said first metal layer to produce an apertured plate consisting essentially of first openings in said first metal layer,

C. etching through said second metal layer in said selected portions of said second metal layer to produce an array of parallel conductors consisting essentially of second openings in said second metal layer,

D. exposing said insulator layer to actinic light through said first openings and said second openings,

E. and then removing solubilized portions of said insulator layer.

4,341,592
METHOD FOR REMOVING PHOTORESIST LAYER FROM SUBSTRATE BY OZONE TREATMENT

Samuel R. Shortes, Lewisville, and Thomas C. Penn, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 4, 1975, Ser. No. 601,861
Int. Cl.³ B44C *1/22;* **C03C** *15/00;* **C23F** *1/00;* **H01L** *21/306*
U.S. Cl. 156—643 **3 Claims**

1. In the fabrication of an electronic structure, a method for removing a layer of photoresist material from a substrate surface of different material, said method comprising:

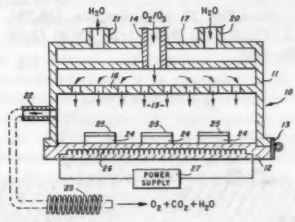
positioning the substrate on which the photoresist layer is disposed in a reaction zone of a reactor,

introducing a gaseous atmosphere containing ozone as an active reagent in an amount sufficient to react with all of the photoresist material in said layer thereof into the reaction zone of said reactor,

exposing said layer of photoresist material to said ozone-containing gaseous atmosphere,

removing photoresist material from the underlying substrate surface in response to exposure of the layer of photoresist material to the ozone while continuously maintaining a sufficient concentration of ozone molecules in the area of the photoresist material at least until the layer of photoresist material is removed,

flowing streams of an inert gaseous atmosphere at the inlet and outlet sides of the reaction zone of said reactor to



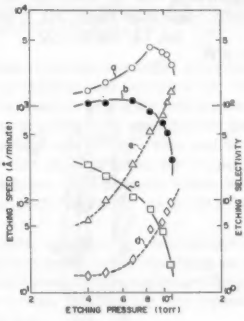
confine the ozone-containing gaseous atmosphere within the reaction zone after the introduction thereof and to restrict the exhaust of excess ozone and reaction products to a predetermined exhaust path, and

exhausting excess ozone and reaction products including the photoresist material of the removed layer from the reactor along the predetermined exhaust path.

4,341,593
PLASMA ETCHING METHOD FOR ALUMINUM-BASED FILMS

Tetuo Kurisaki, Kawasaki; Yasuhiro Horiike, Tateno, and Takashi Yamazaki, Kawasaki, all of Japan, assignors to Tokuda Seisakusyo, Ltd., Zama and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, both of, Japan

Filed Aug. 14, 1980, Ser. No. 177,910
Claims priority, application Japan, Aug. 17, 1979, 54/104032; Sep. 28, 1979, 54/124207; Sep. 28, 1979, 54/124209
Int. Cl.³ C23F *1/02*
U.S. Cl. 156—643 **8 Claims**



1. A plasma etching method comprising the steps of:

placing a workpiece including an aluminum-based film with an exposed portion on a cathode arranged in opposition to an anode;

charging a plasma generating gas consisting of carbon tetrachloride and chlorine gas at a pressure ranging from 0.01 to 0.06 Torr between said anode and cathode, the ratio of the partial pressure of said chlorine gas to the total pressure being 0.8 or less;

applying a high frequency electric power between said anode and cathode to generate a plasma from said plasma generating gas; and

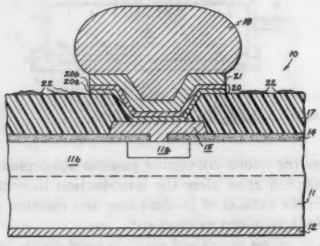
etching said exposed portion of said aluminum-based film by said plasma.

4,341,594

METHOD OF RESTORING SEMICONDUCTOR DEVICE PERFORMANCE

Richard O. Carlson, and Alexander J. Yerman, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 27, 1981, Ser. No. 238,726
Int. Cl.³ C23F *1/00*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—643 **10 Claims**



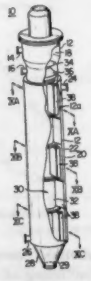
1. A method of removing contaminant metal layers from an organic passivation layer of a semiconductor device, comprising wet chemical etching of said layers followed by plasma etching of metal residue of said contaminant metal layers with an etchant gas at sufficient electric field power and for a sufficient time to remove said metal residue.

4,341,595

ROTARY VANE TYPE EVAPORATOR

Koichi Chino, Hitachi; Hideo Yusa, Katsuta; Akira Oda, Hitachi; Hideichi Miura, Tokaimura; Susumu Horiuchi, Hitachi, and Yoshiyuki Takamura, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 54,945, Jul. 5, 1979, Pat. No. 4,279,692.
This application Nov. 30, 1980, Ser. No. 206,533
Claims priority, application Japan, Jul. 5, 1978, 53/80997
Int. Cl.³ B01D *1/22*
U.S. Cl. 159—6 W **8 Claims**



1. A rotary vane type evaporator comprising:

a vessel having a substantially cylindrical inner peripheral surface defining a substantially cylindrical space about a main axis and having inlet means at one axial end for passing a solution into said vessel at the one end to form a solution region and move axially therethrough to be treated by evaporation so that its viscosity changes in the axial direction to form a slurry region in the axially intermediate portion of said vessel and a powder region at the other axial end, and further having outlet means for removing the powder at the other end;

means for heating at least a portion of said inner peripheral surface of said vessel for enhancing said evaporation;

a rotor including a rotor shaft mounted in said vessel for rotation about said axis and a plurality of radially extending vanes mounted on said rotor shaft for rotation therewith adapted to force and spread said solution, slurry and powder over said vessel inner peripheral surface;

said vanes being disposed in a plurality of stages arranged in the axial direction of said vessel, each region including at least one vane, each vane being pivotally mounted on said rotor shaft about a pivot axis parallel to and radially spaced from the axis of said rotor shaft, a shoe connected to the radially outer end of said vanes and each said shoe having a cylindrical surface slidingly engaging said vessel inner peripheral surface over an area extending along an arc in the circumferential direction of said vessel;

said rotor including means to counteract the effect of axially changing viscosity and to urge said shoes against said vessel inner peripheral surface during rotation of said rotary shaft with radial acting centrifugal forces in said solution and powder regions that are substantially smaller than the radial forces within said slurry region so the shoes of the vanes of all the stages are worn at a substantially equal rate with use of an axially varying viscosity fluid, said means including a balance weight with a center of gravity being mounted on each said shoe for rotation therewith about the pivot axis and disposed to counteract the centrifugal force of the vane and shoe acting on said surface, the balance weight in a position of decreasing counterforce in the axial direction from the feed with the maximum centrifugal force being in an intermediate vane of the slurry region; and

the position of said balance weight varying angularly about the pivot axis along the axial direction to thereby provide the positioning to change the centrifugal force provided by the balance weight from one region to another.

4,341,596

METHOD OF PREPARING REINFORCED ASBESTOS DIAPHRAGMS FOR CHLORINE-CAUSTIC CELLS

Paul R. Mucenieks, Lawrenceville, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Oct. 14, 1980, Ser. No. 196,715
Int. Cl.³ C25B *13/00*
U.S. Cl. 162—105 **5 Claims**

1. A method of preparing a resin modified asbestos diaphragm for use in an electrolytic cell which comprises:

(a) diluting a heat curable polyvinylidene fluoride homopolymer resin latex having a solids content no greater than about 5% with an aqueous sodium hydroxide solution containing from about 4% to about 5% sodium hydroxide, the amount of sodium hydroxide added to the homopolymer latex being sufficient to freely suspend the asbestos fibers which are added in a subsequent step so that the homopolymer resin is deposited upon the asbestos fibers;

(b) adding asbestos fibers to the diluted resin latex with agitation to deposit resin on the asbestos fibers and form a slurry of resin coated asbestos fibers in water said asbestos fibers being present in a ratio of from about 6:1 to about 14:1 asbestos fibers to resin solids;

(c) increasing the amount of sodium hydroxide in the resin coated asbestos fiber slurry to wet the asbestos fibers and to form a stable resin coated fiber dispersion;

(d) depositing the resin coated asbestos fibers on a screen to form a diaphragm, and

(e) curing the diaphragm at elevated temperature.

4,341,597

FIBROUS MATERIAL HAVING GOOD DIMENSIONAL AND HEAT STABILITY

Arne Andersson, Skovde; Jan Emanuelsson, Stenungsund; Ingemar Johansson, Stenungsund, and Svante Wahlen, Stenungsund, all of Sweden, assignors to Rockwool AB, Skovde, Sweden

Filed May 5, 1980, Ser. No. 146,901
Claims priority, application Sweden, May 4, 1979, 7903928
Int. Cl.³ D21H *1/40, 3/02*
U.S. Cl. 162—127 **16 Claims**

1. A fibrous material comprising cellulose fibers and mineral wool fibers in a weight ratio within the range from about 3:7 to about 10:1, and an amount within the range from about 1 to about 30% by weight based on the total weight of the cellulose fibers and mineral wool fibers in the fibrous material, the amount being sufficient to impart dimensional stability thereto, of a water-soluble polyoxyalkylene ether alcohol having the formula:

$$R_1[—O—(C_{n1}H_{2n1}—O)_x—C_{n2}H_{2n2}OH]_m$$

wherein:

R_1 is selected from the group consisting of hydrocarbon and hydrocarbon substituted with secondary hydroxyl groups and free from primary hydroxyl groups and having from one to about twenty-four carbon atoms;

m is a number within the range from 1 to about 6;

n_1 is a number within the range from about 2 to about 4;

n_2 is a number within the range from 3 to 4; and

$—C_{n2}H_{2n2}—OH$ is a branched chain propylene or butylene group having only secondary OH groups; and

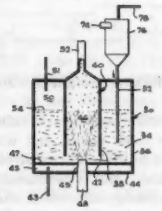
the total of x in all of the m groups (x multiplied by m) is a number within the range from about 2 to about 200.

4,341,598

FLUIDIZED COAL PYROLYSIS APPARATUS

Norman W. Green, Upland, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Division of Ser. No. 66,312, Aug. 14, 1979, Pat. No. 4,280,876, which is a continuation of Ser. No. 873,010, Oct. 27, 1978, abandoned. This application Jun. 30, 1980, Ser. No. 164,818
Int. Cl.³ C10B *1/04, 43/14, 49/22*
U.S. Cl. 202—99 **3 Claims**



1. An apparatus for the pyrolysis in a pyrolysis chamber of agglomerative coal particles which pass through a tacky state during pyrolysis without the formation of deposits on the pyrolysis chamber wall, which comprises:

(a) a pyrolysis chamber having a lower part;

(b) a first inlet means operative for introducing a pressurized fluidizing gas into said lower part of said pyrolysis chamber;

(c) a porous or perforated plate disposed in said lower part of said pyrolysis chamber above said first inlet means, and operative for permittng such pressurized fluidizing gas to flow substantially uniformly through said plate and operative for maintaining a fluidized bed of hot char particles in said pyrolysis chamber;

(d) an outer chamber, said pyrolysis chamber being positioned within said outer chamber and forming an annular space between said outer chamber and said pyrolysis chamber, said porous or perforated plate also being disposed in the lower part of said annular space, said pyrolysis chamber being positioned above said porous or perforated plate so that there is a clearance space between said pyrolysis chamber and said porous or perforated plate,

(e) a standpipe positioned in said annular space and which is operative for receiving from a source and discharging such hot char particles into said annular space, wherein said porous or perforated plate is also operative for maintaining a fluidized bed of such hot char particles in said annular space by such introduction of such pressurized fluidized gas through said first inlet means, and wherein said pyrolysis chamber is in communication with said outer chamber in such a way that it is operative for permitting such hot char particles maintained in such a fluidized bed in said annular space to flow from said annular space through said clearance space and into said pyrolysis chamber above said plate, but wherein said pyrolysis chamber is not in communication with said outer chamber at the upper portion thereof above said fluidized bed of hot char particles in said annular space.

(f) a second inlet means in communication with said pyrolysis chamber operative for introducing agglomerative coal particles and a carrier gas into said lower part of said pyrolysis chamber and into the bottom of such a fluidized bed of hot char particles maintained in said pyrolysis chamber;

(g) a nozzle in communication with said second inlet means and operative for injecting upwardly and substantially centrally into such fluidized bed of hot char particles maintained in said pyrolysis chamber a high velocity fluid jet stream of such agglomerative coal particles in a carrier gas, said nozzle being operative for forming an upwardly expanding turbulent jet stream comprising such agglomerative coal particles and an entrained part of such hot char particles, and for heating such agglomerative coal particles by the transfer of heat from such entrained part of such hot char particles to such agglomerative coal particles so that by the time such agglomerative coal particles contact said pyrolysis chamber wall such agglomerative coal particles will no longer be in a tacky state which is sufficient to form a deposit on said pyrolysis chamber wall, and operative for producing a product char and gaseous products from such heated agglomerative coal particles;

(h) an outlet means connected to and in communication with said pyrolysis chamber and operative for removal from said pyrolysis chamber of a combined stream comprising such gaseous products and such carrier gas, and char solids comprising such product char and such entrained part of such hot char particles, but inoperative for removal of such hot char particles which have not been entrained in such upwardly explaining turbulent jet stream;

(i) a first cyclone separator in communication with said outlet means and operative for separating such char solids from such combined gaseous stream and for producing an effluent gas stream, said first cyclone separator having a solids outlet; and

(j) a recycle means spaced between and in communication with the solids outlet of said first cyclone separator and said standpipe which is operative for recycling such separated char solids to said standpipe, wherein said recycle means comprises a char burner having an outlet, and a second cyclone separator having an inlet and a solids outlet, said char burner being in communication with the solids outlet of said first cyclone separator, said char burner being operative for reheating by partial combustion of at least part of such separated char solids and operative for forming such hot char particles and a combustion gas, wherein the outlet of said char burner is in communication with the inlet to said second cyclone

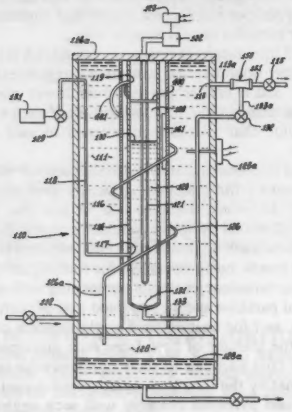
separator, said cyclone separator being operative for separating such hot char particles from such combustion gas, and wherein the solids outlet of said second cyclone separator is in communication with said standpipe.

4,341,599

HEATING APPARATUS

W. Keith R. Watson, P.O. Box 1537, Rancho Santa Fe, Calif. 92067, and Knoxie C. DeLise, 9043 Harmony Grove Rd., Escondido, Calif. 92025

Filed Oct. 24, 1980, Ser. No. 200,530
Int. Cl.³ B01D *3/00*
U.S. Cl. 202—176 **17 Claims**



1. For use in heating fluid, apparatus comprising
(a) an enclosed steam vessel having an inlet for water and an outlet for steam, and a fluid filled tank containing said vessel, and having a tank inlet and tank outlet,
(b) heating means associated with said vessel to heat water received therein and produce steam,
(c) a condenser connected with said vessel outlet to receive steam, said condenser having ductwork extending through the tank in heat transfer relation with said fluid in the tank to heat said fluid in response to condensation of steam in said condenser, the condenser having a condensate outlet, and
(d) other means to automatically remove solid particles and/or dissolved salts, from the vessel, to deliver said particles and/or salts to a heated fluid stream flowing from the tank outlet.

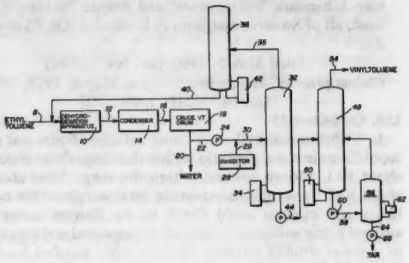
4,341,600

POLYMERIZATION INHIBITOR FOR VINYLTOLUENE

James M. Watson, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

Filed Apr. 6, 1981, Ser. No. 251,368
Int. Cl.³ B01D *3/34*
U.S. Cl. 203—9 **6 Claims**

1. A process for the distillation of vinyltoluene comprising subjecting said vinyltoluene to distillation conditions in the presence of an effective polymerization inhibiting amount of a



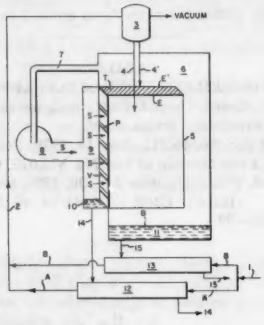
polymerization inhibitor mixture comprising dinitro-p-cresol and N-nitroso-diphenylamine.

4,341,601

WATER EVAPORATION PROCESS

Martval J. Hartig, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 123,023, Feb. 20, 1980, abandoned. This application Nov. 12, 1980, Ser. No. 206,288
Int. Cl.³ B01D *1/22, 1/28, 3/00*
U.S. Cl. 203—11 **10 Claims**



1. In a process for the evaporation of water from an aqueous solution, wherein
(1) The aqueous solution is preheated substantially by means of heat from hot fresh water, and when the volume of liquid concentrate produced downstream is means of heat of liquid concentrate, and is deaerated;
(2) the preheated aqueous solution is introduced at or near the top of a single- or multiple-stage falling film evaporator having a plurality of substantially vertical and equidistant heat exchange elements made of a film of a synthetic polymeric material, each such element having two outer heat exchange surfaces and two inner heat exchange surfaces, said outer surfaces communicating with a feed means for the aqueous solution at or near the top of the evaporator and with a liquid concentrate collection means at the bottom of the evaporator; and said inner surfaces being heated by steam having a temperature higher than the boiling point of the aqueous solution at the operating pressure, the average temperature difference, ΔT, between condensing steam in contact with said inner surfaces and boiling temperature of the aqueous solution in contact with said outer surfaces being about 0.1°–3.5° C.;
(3) the aqueous solution is distributed among the several heat exchange elements and is allowed to fall as a film down their outer heat exchange surfaces, and a portion of the

water evaporates from the aqueous solution at its boiling point, evaporation heat being supplied by steam in contact with the inner heat exchange surfaces of the heat exchange elements, whereby steam condenses to hot fresh water;

hot fresh water being removed from the falling film evaporator and recovered, its heat being used to preheat the incoming aqueous solution;

liquid concentrate, which collects at the bottom of heat exchange elements being removed from the falling film evaporator and disposed of, but if the volume of liquid concentrate is sufficient for an economically attractive operation, its heat being used to preheat the incoming aqueous solution; and

steam formed by water evaporating from the outer surfaces of the heat exchange elements being either compressed and recirculated as the heating steam for the same stage of the falling film evaporator or introduced without compression to a second stage of the falling film evaporator operating in the same manner as the first stage but at a lower steam pressure and lower water boiling temperature;

the improvement of:

(a) providing liquid spreading means being made of fibers or particles which are wettable or made wettable by water, said liquid spreading means having a free area of at least 20%, and the spacing and dimensioning of the individual fibers or particles being such that the descending aqueous solution forms droplets which completely fill the voids, such that each liquid spreading means coacts with its closest outer heat exchange surface and with the flowing aqueous solution to form a stable, thin film over said outer heat exchange surface, thereby permitting even evaporation of water from each said surface without formation of either dry spots or rivulets, said liquid spreading means having a horizontal spreading means component;

(b) maintaining the feed rate of the aqueous solution to be evaporated at less than 300 kg per linear horizontal meter of each outer heat exchange surface per hour, said feed rate always being higher than the evaporation rate of said solution; and

(c) forming said stable, thin film over the entire area of each of said outer heat exchange surfaces.

4,341,602

EXTRACTION OF URANIUM USING ELECTROLYTIC OXIDIZATION AND REDUCTION IN BATH COMPARTMENTS OF A SINGLE CELL

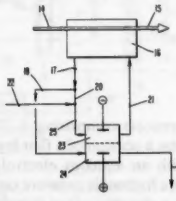
Thomas Nenner, Chaville, and Dominique Foraison, Paris, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Aug. 10, 1979, Ser. No. 65,504

Claims priority, application France, Aug. 17, 1978, 78 23950

Int. Cl.³ C25B *1/00*; C01G *43/00*

U.S. Cl. 204—1.5 **41 Claims**



1. A continuous process for the recovery and concentration of uranium (VI) contained in an organic phase immiscible with water without recovering significant amounts of uranium (IV), which comprises:

(a) treating an organic phase, which is immiscible with water and which contains uranium (VI), in one or a plurality of liquid-liquid contact zones, with an aqueous extraction solution containing a soluble oxidizing-reducing agent in the partially or completely reduced state, said oxidizing-reducing agent being capable of reducing uranium (VI) to uranium (IV) in said aqueous solution, whereby uranium (VI) is reduced and extracted into said aqueous solution in the form of uranium (IV) ions, and wherein said aqueous extraction solution entering the contact zone or zones issues entirely or partially from the cathodic compartment of an electrolytic separation cell under a direct current potential;

(b) separating the organic phase depleted of uranium, and the aqueous phase containing the oxidizing-reducing agent and charged with uranium;

(c) dividing the aqueous phase containing the oxidizing-reducing agent and charged with uranium into two flows;

(d) supplying one of said two flows to the cathodic compartment of an electrolytic cell under a direct current potential, wherein the flow is electrolytically reduced, and then recycling the resultant aqueous flow issuing from said cathodic compartment as the aqueous extraction solution of step (a); and

(e) supplying the other of said two flows to the anodic compartment of said electrolytic cell under a direct current potential, wherein the flow is electrolytically oxidized, and then recovering from said anodic compartment the resultant concentrated aqueous phase containing uranium substantially in the form of uranium (VI) and the oxidizing-reducing agent in its oxidized state.

4,341,603

PROCESS FOR MANUFACTURING SCREENS FOR CENTRIFUGALS, PARTICULARLY WORKING SCREENS FOR CONTINUOUSLY OPERATING SUGAR CENTRIFUGALS

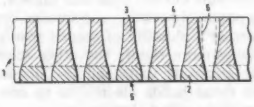
Ernst Heidborn, Brunswick, Fed. Rep. of Germany, assignor to Balco Filtertechnik GmbH, Brunswick, Fed. Rep. of Germany

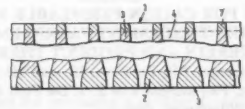
Filed Jun. 25, 1979, Ser. No. 51,634

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1978, 2829529

Int. Cl.³ C25D *1/08*

U.S. Cl. 204—11 **9 Claims**





1. A process for electroforming sugar centrifugal screens having screen slots and a given thickness, comprising preparing an electrically conducting matrix defining a screen pattern, depositing substantially non-etchable screen material by a first electrodeposition on said matrix, terminating said first electrodeposition of the screen material before said given screen thickness is reached and as soon as said screen slots in the substantially non-etchable screen material have reached a given dimension due to lateral growth of the deposited screen material, then depositing an etchable metallic support material by a second electrodeposition on one side of the non-etchable screen material until a thickness corresponding approximately

to said given screen thickness is reached whereby the screen slots in said screen material are gradually filling up during said second electrodeposition from said one side toward the opposite side of the screen material removing the partially finished screen from the matrix, directing an etchant against the surface of the screen material opposite said one side the removed, partially finished screen whereby the screen material itself forms a resist since said liquid etchant is aggressive on the supporting material but does not attack the screen material, and continuing the etchant treatment until the screen slots previously filled up with supporting material are cleared and holes are formed having substantially conical or slanted side walls through the supporting material on the rear side of the screen, whereby the slots in the screen material are defined by a sharp edge of the screen material only on one side of the finished sugar centrifugal screen.

4,341,604

NOVEL ELECTROLYSIS PROCESS

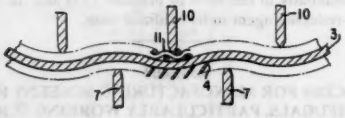
Oronzio DeNora, Milan, Italy, and Placido M. Spaziante, Lugano, Switzerland, assignors to Oronzio deNora Impianti Elettrochimici S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 57,255, Jul. 12, 1979. This application May 20, 1980, Ser. No. 151,695

Claims priority, application Italy, Jul. 27, 1978, 26171 A/78

Int. Cl.³ C25G *1/34, 9/00*

U.S. Cl. 204—98 **40 Claims**



1. A method of generating halogen which comprises electrolyzing an aqueous alkali metal halide in an electrolytic cell having an anode compartment and a cathode compartment separated by a sandwich, said sandwich comprising an ion permeable diaphragm having an oppositely charged electrode unit in contact with each side of the diaphragm, each said electrode unit having a porous electrode surface in direct contact with the side of the diaphragm and comprising an electroconductive porous screen engaging the surface and adapted to distribute current over said surface, maintaining an electrolyzing potential between said screens, applying resilient spring pressure at a plurality of spaced points of one screen while restraining more rigidly the other screen whereby to compress the electrode units and the diaphragm together, feeding alkali metal halide electrolyte to one electrode and feeding water to the other electrolyte.

4,341,605

PROCESS FOR CATION PERMEABLE MEMBRANE WITH REINFORCEMENT FABRIC EMBEDDED THEREIN AND PRODUCT THEREOF

John C. Solenberger, Mt. Prospect, Ill., and Michael S. Withers, Landenberg, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 16, 1981, Ser. No. 225,640

Int. Cl.³ C25B *1/34, 13/02, 13/08*

U.S. Cl. 204—98 **32 Claims**

1. A process for making a reinforced membrane comprising the steps of:

(a) laminating at a temperature from about 150° C. to about 350° C. first surfaces of both a first film and a reinforcement fabric, wherein said reinforcement fabric contacts a porous support material and during laminating, a vacuum causing a pressure differential of at least 5 mm Hg, draws the first surface of the reinforcement fabric and forces a portion of the first surface of the first film into contact with said porous support material;

said film comprising a fluorine-containing polymer with pendant side chains comprising sulfonyl groups present as $-SO_2F$ or $-SO_2Cl$, or carboxyl groups present as —COOR where R is lower alkyl, or —CN groups, each of said sulfonyl or carboxyl groups attached to a carbon atom which has at least one fluorine atom connected thereto;

(b) separating said reinforcement fabric and said first film from said porous support material whereby a laminate is obtained with holes in an area at least 5% of an overall surface area of said film;

(c) laminating at a temperature from about 150° C. to 350° C. a second film with

(i) the first surface of said first film, and

(ii) a second surface of said reinforcement fabric,

and during laminating a vacuum causing a pressure differential of at least 5 mm Hg draws the second film onto (i) and (ii), said second film comprising a fluorine-containing polymer with pendant side chains comprising sulfonyl groups present as $-SO_2F$ or $-SO_2Cl$, or carboxyl groups present as —COOR where R is lower alkyl, or —CN groups, each of said sulfonyl or carboxyl groups attached to a carbon atom which has at least one fluorine atom connected thereto, causing embedment of said fabric in a matrix of at least one said fluorine-containing polymer and causing formation of a membrane substantially free of holes.

4,341,606

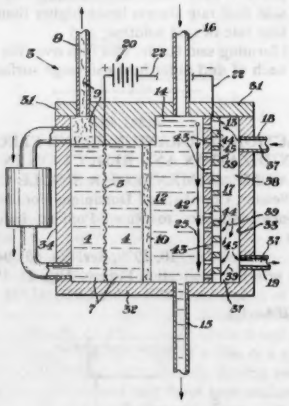
METHOD OF OPERATING ELECTROLYTIC CELLS HAVING MASSIVE DUAL POROSITY GAS ELECTRODES

James A. McIntyre; Robert F. Phillips, both of Midland, and Joseph D. Lefevre, Bay City, all of Mich., assignors to The Dow Chemical Co., Midland, Mich.

Continuation-in-part of Ser. No. 939,598, Sep. 5, 1978, Pat. No. 4,260,469. This application Feb. 20, 1981, Ser. No. 236,355

Int. Cl.³ C25B *1/34*

U.S. Cl. 204—98 **11 Claims**



1. An electrolytic process comprising

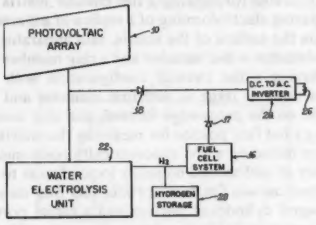
(a) contacting at least a portion of a first layer of a multi-layered cathode with an aqueous electrolyte, wherein the electrolyte exerts a hydraulic pressure on the cathode; said first layer having a plurality of passageways passing therethrough and connecting with a plurality of passageways passing through a second cathode layer; wherein the passageways of the first layer have a first capillary pressure and the passageways of the second layer have a second capillary pressure which is lower than the first capillary pressure;

(b) contacting at least a portion of the second layer with an oxygen-containing gas at a pressure greater than the sum of the second capillary pressure and the hydraulic pressure of the electrolyte and less than the first capillary pressure; and
(c) electrolyzing the electrolyte.

4,341,607
SOLAR POWER SYSTEM REQUIRING NO ACTIVE CONTROL DEVICE

Raymond R. Tison, St. Johns, Mich., assignor to E:F Technology, Inc., St. Johns, Mich.

Filed Dec. 8, 1980, Ser. No. 214,193
Int. Cl.³ C25B *1/02;* H01L *31/04*
U.S. Cl. 204—129 30 Claims

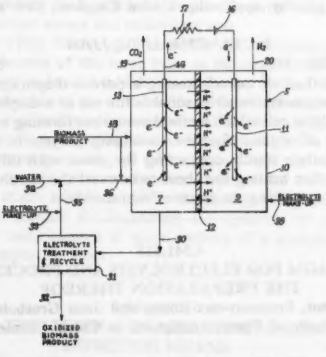


30. A method of increasing the useful power in a solar power system comprising the following steps:
passing a portion of the current from the photovoltaic array through a water electrolysis unit which provides a voltage-dependent variable resistance load and produces hydrogen and oxygen;
passing the remaining portion of the array current through a demand-dependent variable resistance load; and
storing hydrogen produced in said electrolysis unit in a hydrogen storage chamber.

4,341,608
HYDROGEN PRODUCTION BY BIOMASS PRODUCT DEPOLARIZED WATER ELECTROLYSIS

Michael R. St. John, Chicago, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Feb. 17, 1981, Ser. No. 234,692
Int. Cl.³ C25B *1/04*
U.S. Cl. 204—129 44 Claims



1. A process for hydrogen production by biomass product depolarized water electrolysis comprising: maintaining an electrical potential across a metallic anode in an anode zone and a metallic cathode in a cathode zone of an electrolytic cell; oxidizing, in an aqueous electrolyte in said electrolytic cell anode zone, oxidizable biomass product selected from the group consisting of monosaccharides, lignins and mixtures thereof with water producing oxidized biomass product, hydrogen ions and electrons; transporting said hydrogen ions through said electrolyte to said cathode zone; forming molecular hydrogen in said cathode zone.

4,341,609
ELECTROCHEMICAL CONVERSION OF BIOMASS

Abolghassem Eskamani, Aurora, and Helen D. Dernar, Parma, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

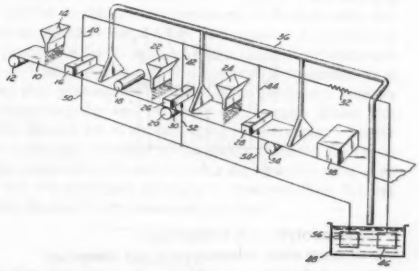
Filed Feb. 26, 1981, Ser. No. 238,307
Int. Cl.³ D21C *3/22*
U.S. Cl. 204—132 10 Claims

1. A process for degrading a substrate of lignocellulose or constituents of lignocellulose, the process comprising placing the substrate into the anodic section of an electrolytic cell containing electrodes and an electrolyte selected from the group consisting of sodium hydroxide and sulfuric acid, and applying an electromotive force of sufficient strength to at least partially degrade the substrate.

4,341,610
ENERGY EFFICIENT PROCESS FOR CONTINUOUS PRODUCTION OF THIN SEMICONDUCTOR FILMS ON METALLIC SUBSTRATES

John C. Schumacher, 1944 Calle Buena Ventura, Oceanside, Calif. 92054

Division of Ser. No. 918,034, Jun. 22, 1978. This application Mar. 27, 1980, Ser. No. 134,446
Int. Cl.³ C25D *17/00, 21/16*
U.S. Cl. 204—206 4 Claims

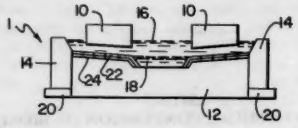


1. An apparatus for providing a semiconductor matrix comprising:
(a) means for coating an electrical contact material with a solution containing ions of a semiconductor element and appropriate dopant;
(b) means for contacting said solution with an alkali metal anode to produce a layer of doped elemental semiconductor on said electrical contact material, generation of alkali ions, and release of energy;
(c) means for introducing an opposite type dopant to said electrical contact material; and
(d) means for electrodepositing regenerated alkali metal of said alkali metal anode by employing the said released energy.

4,341,611
ALUMINA REDUCTION CELL

Howard I. Kaplan, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.

Filed Dec. 18, 1980, Ser. No. 217,774
Int. Cl.[3] C25C 3/08
U.S. Cl. 204—243 R 26 Claims

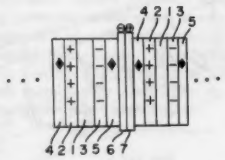


14. In an alumina reduction cell, said cell comprising an anode, sidewalls and a cathode, the improvement wherein said cathode comprises a carbonaceous bed, surface tiles, said surface tiles being formed from TiB_2 or TiB_2-AlN mixtures, and intermediate tiles connecting said surface tiles to said carbonaceous bed and separating said surface tiles from said carbonaceous bed, said intermediate tiles having a composition different from said surface tiles and selected from the group consisting of nitrides, oxy-nitrides and carbides, to prevent reaction between said surface tiles and said carbonaceous bed in the presence of molten aluminum.

4,341,612
ELECTROLYTIC CELL

Yoshio Oda; Takeshi Morimoto, and Kohji Suzuki, all of Yokohama, Japan, assignors to Asahi Glass Company, Limited, Tokyo, Japan

Filed May 22, 1980, Ser. No. 152,351
Claims priority, application Japan, Jun. 1, 1979, 54/67462
Int. Cl.[3] C25B 11/08; H01B 1/06
U.S. Cl. 204—253 5 Claims

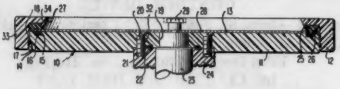


1. An electrolytic cell, comprising:
two or more units, wherein each unit comprises
a gas and liquid permeable anode wherein said anode contacts one surface of a cation exchange membrane and wherein said anode is made of a pyrochlore type complex oxide having the formula $Tl_2Ru_{2-x}Ir_xO_7$ wherein x is from 0.3 to 1.5,
a gas and liquid permeable cathode wherein said cathode contacts the other surface of said membrane,
a first gas and liquid permeable current collector which closely contacts a back surface of said anode,
a second gas and liquid permeable current collector which closely contacts a back surface of said cathode, and
a partition wall made of an anode side conductor and a cathode side conductor wherein said anode said conductor contacts said first current collector and said anode side conductor contacts said second current collector.

4,341,613
APPARATUS FOR ELECTROFORMING

John J. Prusak, and Marshall L. Whitehurst, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 3, 1981, Ser. No. 231,266
Int. Cl.[3] C25D 1/10, 17/06
U.S. Cl. 204—281 5 Claims



1. An apparatus for holding a flat circular matrix of a first diameter during electroforming of a replica of a second smaller diameter on the surface of the matrix, said apparatus comprising in combination a disc member and a ring member; said ring member having a flat circular configuration with an outer diameter at least as large as said first diameter and having a male thread on the outer edge thereof, said disc member further having a flat face portion for receiving the matrix, said flat face portion including a first concentrically positioned circular seal member of said second diameter located so as to engage a matrix placed on said flat face portion; said ring member having an integral cylindrical portion and a radial portion, said cylindrical portion having an inner diameter with a female thread defined there which is threadably engaged with the male thread on the outer edge of the disc member, said radial portion of the ring member extending radially inward from said first portion for a predetermined distance sufficient to provide a mask over the outer edge of the matrix during electroforming of the replica, said radial portion further including a second concentrically positioned seal member of said second diameter in an opposing relation to said first seal member; whereby when a matrix is placed on said flat face portion of the disc member and the ring member is threaded toward the disc member the first and second seal members engage, hold, and seal the matrix for formation of said replica on the surface of the matrix.

4,341,614
PRODUCTION OF POROUS DIAPHRAGMS

Aitken M. Couper, and Stuart F. Mellish, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 30, 1978, Ser. No. 955,603
Claims priority, application United Kingdom, Nov. 15, 1977, 47442/77
Int. Cl.[3] C25B 13/04, 13/08
U.S. Cl. 204—296 6 Claims

1. A method of manufacturing a porous diaphragm of an organic polymeric material suitable for use as a diaphragm in an electrolytic cell which method comprises forming a sheet of a mixture of organic fluorine-containing polymeric material and particulate starch, contacting the sheet with dilute acid and thereafter heating the sheet to convert the starch to dextrine, and extracting the dextrin from the sheet.

4,341,615
DIAPHRAGM FOR ELECTROLYSIS AND PROCESS FOR THE PREPARATION THEREOF

Jean Bachot, Fontenay-aux-Roses, and Jean Grosbois, L'Isle Adam, both of France, assignors to Chloe Chimie, Paris, France

Filed Jan. 21, 1981, Ser. No. 226,693
Claims priority, application France, Jan. 29, 1980, 80 01843
Int. Cl.[3] C25B 13/08, 13/02
U.S. Cl. 204—296 2 Claims

1. A porous hydrophilic diaphragm having a base of fluorinated polymers for electrolysis, characterized by the fact that

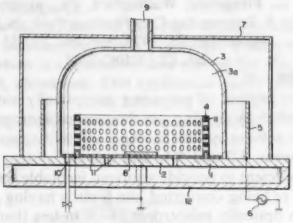
it is microporous and covered on at least a part of the inner surface of its pores with a copolymer of unsaturated carboxylic acid and non-ionic unsaturated monomer, the porosity being from about 50 to about 95 percent, the equivalent average diameter of the pores being from about 0.1 to about 12 micrometers, and 0.1 to 6 percent of the pore volume being occupied by dry polymer.

4,341,616

DRY ETCHING DEVICE

Masao Nagatomo, Itami; Haruhiko Abe, Takarazuka, and Kazuo Mizuguchi, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 11, 1980, Ser. No. 215,185
Claims priority, application Japan, Jan. 25, 1980, 55-8179
Int. Cl.³ C23C *15/00*; C23F *1/00*
U.S. Cl. 204—298 **7 Claims**



1. A dry etching device comprising:
a support member which is capable of supporting at least an etching workpiece;
a case forming, in cooperation with the support member, a chamber which is capable of receiving said etching workpiece;
a first electrode having plasma permeability and which is provided within said chamber in a region peripheral to said etching workpiece;
a second electrode provided outside said chamber so as to oppose said first electrode;
an exhaust outlet provided on said chamber for reducing the pressure within said chamber;
reactant gas supply means including an inlet for introducing a reactant gas into said chamber;
a high frequency power source for producing a high frequency electrical field between said two electrodes to turn said reactant gas into an etchant plasma containing chemically active atoms and molecules; and
a resin coating consisting of resin material containing atoms or molecules of the same type as the chemically active atoms or molecules which constitute the etchant, formed on at least one of the surfaces of said first electrode and the surfaces of said support member within the chamber, said resin coating protecting said surfaces on which it is coated to prevent sputtering of said surfaces, and said coating atoms or molecules of the same type as the chemically active atoms which constitute the etchant being sputtered by the etchant for increasing the quantity of etchant within said chamber to speed etching of a workpiece on said support member.

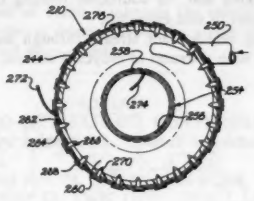
4,341,617

LIQUID TREATER HAVING ELECTRICAL CHARGE INJECTION MEANS

Arthur S. King, 8021 Cherokee La., Leawood, Kans. 66206

Filed Jan. 30, 1981, Ser. No. 229,960
Int. Cl.³ B03C *5/02*
U.S. Cl. 204—302 **4 Claims**

1. An electrical treater for use in causing the flocculation of impurity particles in a liquid comprising:
means for defining a treating chamber;
means for introducing liquid to be treated into said chamber and for directing liquid out of said chamber after treatment; and
a pair of oppositely electrically charged electrodes associated with said chamber in disposition for exposing the liquid in said chamber to an electric field established between said electrodes,



at least one of said electrodes including a multiplicity of projections each directed toward the other electrode and terminating in an outermost, generally conical tip,
said electrodes being electrically insulated from one another to prevent electrical current flow therebetween,
said one electrode being provided with an electrical insulator covering said tips of the projections to prevent physical contact of the tips with liquid in said chamber.

4,341,618

PROCESS FOR THE LIQUEFACTION OF SOLID CARBONACEOUS MATERIALS WHEREIN NITROGEN IS SEPARATED FROM HYDROGEN VIA AMMONIA SYNTHESIS

Steven S. Stetka, Fleetwood, Pa., and Francisco N. Nazario, Parsippany, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 71,451, Aug. 31, 1979, abandoned. This application May 29, 1980, Ser. No. 154,349
Int. Cl.³ C10G *1/00*; C01C *1/04*; C01B *21/00*; C01C *3/00*
U.S. Cl. 208—8 LE **10 Claims**

1. In a process for the liquefaction of solid carbonaceous materials wherein a solid carbonaceous material is slurried in a suitable solvent or diluent and contacted with molecular hydrogen at an elevated temperature and pressure to produce a gaseous product, a liquid product and a bottoms product and wherein at least a portion of the bottoms is upgraded in a processing step wherein air is employed to produce a gaseous stream comprising H_2 and N_2 in an H_2:N_2 ratio within the range from about 0.5:1 to about 1:1, the improvement wherein sufficient hydrogen is added to the gas comprising H_2:N_2 to yield a gas comprising H_2 and N_2 in an H_2:N_2 molar ratio of at least 75 and the molecular nitrogen is removed from the gas comprising H_2 and N_2 by ammonia synthesis.

4,341,619

SUPERCRITICAL TAR SAND EXTRACTION

Forrest L. Poska, Dallas, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 11, 1980, Ser. No. 176,749
Int. Cl.³ C10G *1/00*
U.S. Cl. 208—11 LE **2 Claims**

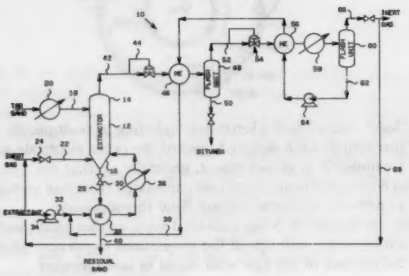
1. A process for the recovery for the recovery of carbonaceous materials from tar sand comprising
(a) heating said tar sands to a temperature near the extraction temperature,
(b) countercurrently in an extractor free of added water contacting a stream of tar sands and a stream of solvent under supercritical conditions with respect to the solvent, where the stream of tar sand is introduced into the upper portion of said extractor flowing essentially vertically downward, and where said solvent is introduced into the

lower portion of said extractor flowing essentially vertically upward, such as to produce a stream of denuded sand and an extract stream essentially free of sand;

(c) introducing a stream of inert gas into the lower portion of said extractor to purge said solvent from said denuded sand,

(d) passing said stream of solvent prior to its contact with the tar sand in indirect heat exchange contact with said denuded sand and via additional heating means into said lower part of said extractor,

(e) passing said extract stream through indirect heat exchange with a stream of recycled solvent,



(f) flashing said extract stream from step (e) to recover a gas phase comprising said solvent and said inert gas, and a non-gaseous phase comprising bitumen,

(g) cooling said gas phase by passing it in indirect heat exchange with said stream of recycled solvent,

(h) separating the so-cooled gas phase into a stream of said inert gas and said stream of recycled solvent;

(i) recycling said stream of recycled solvent to the extraction step;

(j) recycling said stream of said inert gas into step (c),

with the proviso that the entire process is carried out in the absence of added water.

4,341,620

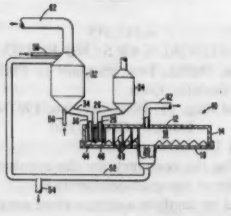
METHOD AND APPARATUS FOR PROCESSING OIL SHALE IN A ROTARY HEARTH

LaVaun S. Merrill, Jr., Englewood, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Continuation of Ser. No. 2,413, Jan. 10, 1979, abandoned. This application Jan. 8, 1981, Ser. No. 232,944

Int. Cl.³ C10G *1/02*; C10B *1/06*

U.S. Cl. 208—11 R **13 Claims**



1. A process for recovering volatile hydrocarbons and hydrocarbon-containing oil shale including steps of:

(1) supplying hydrocarbon-containing oil shale to the floor of a rabbled rotary hearth in a chamber;

(2) supplying at least an equal weight proportion of heated spent oil shale heat exchange medium to the floor of said hearth in close radial proximity to the said hydrocarbon-containing oil shale;

(3) mixing said hydrocarbon-containing oil shale and said heat exchange medium by means of relative rotary motion between said hearth and said rabbles, whereby heat is exchanged from the heat exchange medium to the hydrocarbon-containing oil shale to drive volatile hydrocarbons from said shale and leave spent oil shale;

(4) quickly removing said volatile hydrocarbons from said chamber; and

(5) recycling at least a portion of said spent oil shale produced from step 3 to a heating zone wherein the spent shale is heated to obtain heated spent oil shale exchange medium and then introducing said exchange medium to the floor of the hearth via step 2.

4,341,621

NEOMESOPHASE FORMATION

Cornelius G. Fitzgerald, Wallingford, Pa., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 26, 1979, Ser. No. 23,753

Int. Cl.³ C10C *3/08*

U.S. Cl. 208—45 **17 Claims**

1. In the process of preparing an optically anisotropic deformable pitch by treating a carbonaceous isotropic pitch with an organic solvent system having a solubility parameter at 25° C. of between 8.0 and 9.5, said solvent system being in an amount sufficient to provide a solvent insoluble fraction which is capable of being converted into a pitch having greater than 75% of an optically anisotropic phase in less than 10 minutes when heated at about 30° C. above the point where the solvent insoluble fraction becomes liquid and thereafter separating and heating said solvent insoluble fraction whereby an optically anisotropic deformable pitch is obtained, the improvement comprising adding a dealkylation catalyst selected from heavy metal halides, Lewis acids, and Lewis acid salts to said organic solvent system and thereafter contacting said catalyst and said pitch in said solvent system at temperatures ranging generally from about ambient temperature to about 250° C. for a time sufficient to increase the solvent insoluble fraction of the pitch over that normally present therein, thereafter separating said solvent insoluble fraction from said solvent system and heating said solvent insoluble fraction at from about 250° C. to about 400° C. whereby an optically anisotropic deformable pitch is obtained.

4,341,622

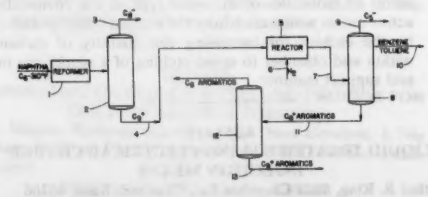
MANUFACTURE OF BENZENE, TOLUENE AND XYLENE

Samuel A. Tabak, Wenonah, and Roger A. Morrison, Deptford, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 4, 1980, Ser. No. 212,770

Int. Cl.³ C10G *35/04*; C07C *5/22, 4/12*

U.S. Cl. 208—66 **14 Claims**



1. A process for the manufacture of aromatic hydrocarbons which comprises subjecting a hydrocarbon naphtha to catalytic reforming under conditions to convert naphthenes to aromatic hydrocarbons in a reformate reaction product, distilling said reformate to separate compounds of less than nine

carbons from a heavy reformate, contacting said heavy reformate at 800°–1000° F. with a zeolite catalyst having a constraint index of 1 to 12, a silica/alumina ratio above about 12 and reduced acid activity such that less than 2 weight percent of xylene is converted to compounds other than xylene when contacted with said catalyst at 900° F., 200 psig and LHSV of 5, whereby to convert ethylbenzene and alkylbenzenes of more than eight carbon atoms to benzene, toluene and xylene, distilling the product of said contacting to separate benzene, toluene and xylene.

4,341,623

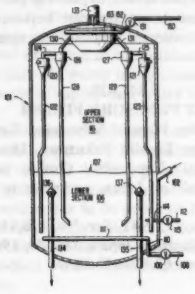
CATALYTIC CRACKING USING A MIXTURE OF CRACKING CATALYST PARTICLES WITH PARTICLES OF PLATINUM GROUP METAL OR RHENIUM ON INERT SUBSTRATES REGENERATED TO UP TO ABOUT 0.1% COKE

Ralph J. Bertolacini, Chesterton, and William L. Forsythe, Jr., Munster, both of Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 963,991, Nov. 27, 1978, abandoned, which is a continuation of Ser. No. 664,057, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 447,753, Mar. 4, 1974, abandoned. This application Jun. 11, 1980, Ser. No. 158,613

Int. Cl.³ C10G *11/18, 11/05;* **B01J** *23/96, 29/38*

U.S. Cl. 208—113 **7 Claims**



1. A process for the fluidized catalytic cracking of higher molecular weight hydrocarbon to produce gasoline or distillate fuel range hydrocarbon comprising:

(a) contacting in a cracking zone said higher molecular weight hydrocarbon with a cracking catalyst which becomes deactivated with coke deposits while being employed in said cracking, and thereby producing gasoline or distillate fuel range hydrocarbon;

(b) withdrawing coked cracking catalyst particles from said cracking zone, said catalyst particles being in admixture with particles containing platinum group metal or rhenium oxidation promoter supported on a substrate which is substantially inert to said cracking;

(c) contacting said mixed particles in a regeneration zone with an oxygen-containing regeneration gas stream in excess of that required for substantially complete combustion of carbon monoxide formed and substantially complete burning of coke from said particles to provide effluent gas containing up to about 1 volume % carbon monoxide and regenerated catalyst particles having up to about 0.1% coke, the amount of said oxidation promoter being effective to enhance the oxidation of carbon monoxide at regeneration temperature, said amount being up to about 10 ppm. based on said cracking catalyst, and the amount of said admixture of particles being sufficient to absorb the major amount of the heat from the combustion of said carbon monoxide and burning of said coke;

(d) withdrawing from the said regeneration zone oxidation promoter-containing particles admixed with cracking catalyst particles; and

(e) returning said mixture to said cracking zone wherein cracking catalyst and said platinum group metal or rhenium oxidation promoter are contacted with said higher molecular weight hydrocarbon and said cracking is thereby obtained.

2. The process of claim 1 wherein the oxidation promoter is employed in an amount of about 0.1 ppm.

3. The process of claim 1 wherein the substrate for said oxidation promoter is selected from the group consisting of silica, alumina and silica-alumina.

4,341,624

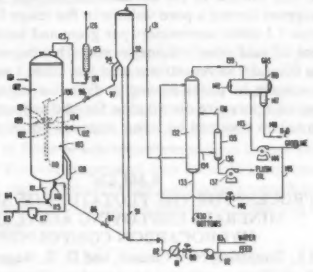
CARBO-METALLIC OIL CONVERSION

George D. Myers, Ashland, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 14, 1979, Ser. No. 94,216

Int. Cl.³ C10G *11/05, 11/18*

U.S. Cl. 208—120 **83 Claims**



1. A process for economically converting carbometallic oils to lighter products, comprising:

I. providing a converter feed containing 650° F.+material, said 650° F.+material being characterized by a carbon residue on pyrolysis of at least about 1 and by containing at least about 4 parts per million of Nickel Equivalents of heavy metal(s);

II. bringing said converter feed together with cracking catalyst to form a stream comprising a suspension of said catalyst in said converter feed and causing the resultant stream to flow through a progressive flow type reactor having an elongated reaction chamber which is at least in part vertical or inclined for a vapor residence time in the range of about 0.5 to about 10 seconds at a reaction chamber outlet temperature of about 900° to about 1400° F. and under a pressure of about 10 to about 50 pounds per square inch absolute sufficient for causing a conversion per pass in the range of about 50% to about 90% while producing coke in amounts in the range of about 6 to about 14% by weight based on fresh feed, and laying down coke on the catalyst in amounts in the range of about 0.3 to about 3% by weight;

III. ballistically separating said catalyst from the stream of hydrocarbons formed by vaporized feed and resultant cracking products in the elongated reaction chamber by projecting catalyst particles in a direction established by said elongated reaction chamber or an extension thereof, and causing said products to make an abrupt change of direction relative to the direction in which said catalyst particles are projects;

IV. stripping hydrocarbons from said separated catalyst;

V. regenerating said catalyst; and

VI. recycling the regenerated catalyst to the reactor for contact with fresh feed.

4,341,625

METHOD FOR PREPARING A CATALYST CARRIER, A CATALYST CONTAINING THE CARRIER, AND A HYDROCARBON HYDRODESULFURIZATION PROCESS USING THE CATALYST

Paul W. Tamm, Greenbrae, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 91,305, Nov. 5, 1979, abandoned, which is a continuation of Ser. No. 859,421, Dec. 12, 1977, abandoned, which is a continuation of Ser. No. 496,788, Aug. 12, 1974, Pat. No. 4,113,661, which is a continuation-in-part of Ser. No. 387,100, Aug. 9, 1973, abandoned. This application Jun. 16, 1980, Ser. No. 159,887

The portion of the term of this patent subsequent to Jan. 3, 1995, has been disclaimed.

Int. Cl.³ C10G *45/06*

U.S. Cl. 208—216 PP **12 Claims**

1. A process for hydrodesulfurizing a hydrocarbon feed containing at least 10 ppm metals which comprises contacting the feedstock under hydrodesulfurizing conditions with a catalyst composition comprising an alumina support, a Group VIB component and a Group VIII component, said components being selected from the group consisting of the metals, oxides and sulfides of the elements of Groups VIB and VIII, said support having a pore volume in the range from about 0.5 to about 1.1 cubic centimeters per gram and having at least 70 percent of said pore volume in pores having a diameter between 80 and 150 Angstroms and less than 3 percent of said pore volume in pores having a diameter above 1000 Angstroms, said pore size distribution for said support corresponding to values obtained by using mercury porosimetry.

4,341,626

PROCESS FOR THE FLOTATION OF SULFIDE MINERALS EMPLOYING ALKYLARYL HYDROCARBON COMPOUNDS

David L. Dauplaise, New Canaan, and D. R. Nagaraj, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 22, 1980, Ser. No. 218,373

Int. Cl.³ B03D *1/02*

U.S. Cl. 209—166 **11 Claims**

1. A process for the froth flotation of sulfide ores comprising adding to a flotation circuit an effective amount of a frother and a collector wherein said collector is of the general formula

$$R_1—(—R—)—R_2$$

wherein

(a) R is benzene or naphthalene;

(b) R_1 and R_2 are alkyl or alkenyl groups having at least three carbon atoms each, except that R_1 may have less than three carbon atoms or may be hydrogen if:

(i) R is naphthalene; or

(ii) R_2 is more than six carbon atoms; and

(c) the total number of carbon atoms of R_1, R_2 and R_3 taken together is not greater than about 20; and wherein said collector is derived from alkylating an aromatic compound with an olefin, conditioning the sulfide ore, introducing a gas into the circuit to effect frothing and thereafter recovering the mineral values.

4,341,627

SCREEN SEPARATOR

Joe K. Heilhecker, Houston, Tex., assignor to The Brandt Company, Houston, Tex.

Filed May 6, 1981, Ser. No. 261,144

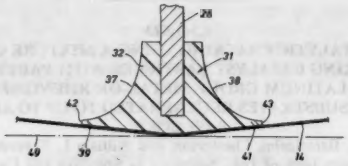
Int. Cl.³ B07B *1/46*

U.S. Cl. 209—409 **10 Claims**

1. In an oscillating separator mechanism having a screen framework mounting a screen at its peripheral edges between parallel side members adapted to place the screen into tension, at least one cushion rail fixedly disposed between the parallel side members, and a resilient screen cushion carried by the cushion rail in tight engagement with the tensioned screen, the improvement comprising;

(a) said resilient screen cushion having an elongated body with a longitudinal slot in its topside for receiving the lower edge of the cushion rail,

(b) said body having diverging sides extending from the topside adjacent said slot to flared lips at each edge on the bottom side of said body,



(c) said bottom side of said body having a concave surface between said flared lips before said screen cushion is in contact with said screen, and

(d) said bottom side of said body producing a downward bow in said screen after being placed under tension in the screen framework and said bottom side providing a surface conforming to the curvature of the bowed screen with substantial compression being extended by said flared lips against said screen to prevent particulate matter from entering and being trapped between said screen cushion and the tensioned screen it engages.

4,341,628

BELT PRESSURE FILTER

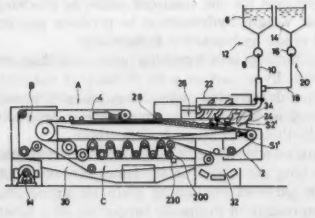
Susumu Fujinami, Kobe; Hiroaki Miyamoto, Kashihara; Ryoichi Morimine, Nara; Toshiki Fukuzawa, Osaka; Toshihiko Ueda, Suita; Shoji Umakoshi, Osaka, and Kiyohiko Tokunaga, Ikoma, all of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Jan. 27, 1981, Ser. No. 228,913

Claims priority, application Japan, Jan. 30, 1980, 55/9806

Int. Cl.³ B01D *33/04*

U.S. Cl. 210—101 **13 Claims**



1. A belt pressure filter including a gravity dewatering zone for dewatering a material being dewatered by gravity, and in a forced dewatering zone for forced dewatering the material being processed through external pressure, comprising: endless filter belt means arranged to travel through said gravity dewatering zone and through said for forced dewatering zone, material supply means for supplying said material being processed to said filter belt means in said gravity dewatering zone, layer thickness information providing means operatively located for sensing the thickness of a layer of material deposited onto said filter belt means by said material supply means for providing information representing the layer thickness of said material being supplied by said material supply means for processing, and filter belt travelling speed control means operatively connected to said layer thickness information providing

means for controlling the traveling speed of said filter belt means so that the filter belt speed is substantially proportional to said layer thickness.

4,341,629

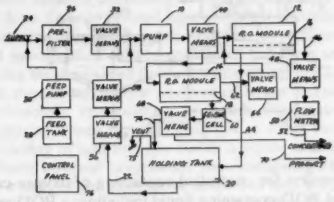
MEANS FOR DESALINATION OF WATER THROUGH REVERSE OSMOSIS

Robert A. Uhlinger, Carlsbad, Calif., assignor to Sand and Sea Industries, Inc., Carlsbad, Calif.

Filed Aug. 28, 1978, Ser. No. 937,324

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—128 **2 Claims**



1. Means for the desalination of water through reverse osmosis, comprising:

(a) a single pump to pressurize water in the system,

(b) a source of water to be processed and reverse osmosis means including a membrane and operative automatically to continuously divide said water to be processed into a first permeate product and a first concentrate,

(c) said source of water to be purified being connected to said pump and said pump being connected to said reverse osmosis means to supply said water to be processed under pressure,

(d) a tank and means connecting said tank to said reverse osmosis means operative automatically to continuously receive and to store the first permeate product,

(e) valved operating means operative to disconnect said source of said water to be processed from said pump and to connect said tank to said pump to run said first permeate product through said reverse osmosis means a second time to produce a second permeate product and a second concentrate,

(f) a float-operated switch in said tank operating when the level of said first permeate product reaches a selected level, said valved operating means being automatically operative to disconnect said source and to connect said tank upon operation of said switch,

(g) a second lower float-operated switch in said tank operating when the level of said first permeate product has returned from said selected level to near empty and said valved operating means automatically operating upon operation of said second switch to discontinue feeding said first permeate product to said pump, and

(h) said float-operated switches and said valved operating means having time delay means so that the influence of sloshing on said switches is eliminated.

4,341,630

ARRANGEMENT FOR SEPARATION OF A SUSPENSION OR EMULSION FROM LIQUIDS BY FLOTATION

Svatopluk Mackrle, Brno, and Milos Novotny, Ostrava, both of Czechoslovakia, assignors to Agrotechnika, narodny podnik, Zvolen, Czechoslovakia

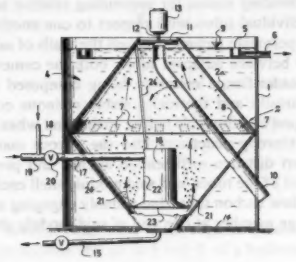
Filed Jun. 15, 1981, Ser. No. 273,445

Claims priority, application Czechoslovakia, Jun. 16, 1980, 4273-80

Int. Cl.³ C02F *1/24*

U.S. Cl. 210—221.2 **8 Claims**

1. Arrangement for the separation of suspensions or emulsions from liquids by flotation, comprising a vessel with a side wall, a partition wall within said side wall defining a flotation space with an upper and a lower part, means for supplying liquid to be treated to the arrangement, means for the removal of treated liquid, means for the removal of flotated foam and of sedimented sludge, the lower part of the flotation space widening from the bottom upwards to a top part, the supply of the treated liquid terminating in the flotation space, means for the removal of foam provided with an inlet at the top part of the flotation space and continuing downwards at an inclination beyond the flotation vessel, a collecting space for cleaned liquid formed between the wall of the vessel and the upper part



of the partition wall in the upper part of the tank and separated by the upper part of the partition wall from the flotation space, transfer openings provided in the partition wall above the maximum width thereof, said transfer openings connecting the flotation space with the space for cleaned liquid, a rectifying wall provided in front of said transfer openings for preventing passage of the flotated suspension into the collecting space of cleaned liquid, and means including a collecting trough for the removal of cleaned liquid in the top part of the collecting space for cleaned liquid.

4,341,631

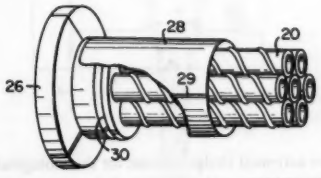
ULTRAFILTRATION AND REVERSE OSMOSIS DEVICE COMPRISING PLURAL CARBON TUBES BONDED TOGETHER

Bartholomew Hargitay, White Plains, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 73,295, Sep. 7, 1979, abandoned. This application Dec. 1, 1980, Ser. No. 211,680

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—323.2 **5 Claims**



1. In an ultrafiltration and reverse osmosis device including a module shell containing a plurality of axially aligned, longitudinally coextensive, hollow, porous carbon tubes disposed in a permeate collection zone, all of said tubes having an internal diameter of from about 0.3 centimeters to about 3.0 centimeters and average pore diameters, at least 50 percent of which are within the range of from about 0.1 to about 2.0 micrometers, and having an internal coating of aggregates of metal oxide particles; the improvement whereby means are provided for rendering said device mechanically strong and able to withstand substantial axial compression without fracture of said tubes and at the same time is rendered more amenable to cleaning and sterilization, said improvement comprising an elon-

gated, rigid, self-supporting pack of said hollow, porous carbon tubes bonded and sealed together at each end by an inert, rigid, high strength, thermally stable header-flange member defining substantially smooth, crevice-free surfaces thereon, at least one of said surfaces is substantially flat and lies in a plane which is substantially perpendicular to the longitudinal axis of said tubes and which is substantially coincident with the ends thereof, and said porous carbon tubes bonded together at spaced intervals along their outer surfaces, between and spaced from said header-flange members, by a plurality of cement deposits providing means for preventing relative axial movement of individual tubes with respect to one another and for permitting permeate passing through the walls of said tubes to flow freely between adjacent tubes, both the cement deposits and said header-flange members being composed of a hard, rigid, chemically and thermally stable resinous composition which is liquid and flowable before curing and when applied to said tubes thereby penetrates into the porous matrix of the tubes a short distance sufficient to anchor and prevent axial displacement of the tubes, and said module shell enclosing said pack of hollow carbon tubes and slidably engaging at least one header-flange member at one end of said module shell.

4,341,632

DESTRUCTION OF BULKING SLUDGE

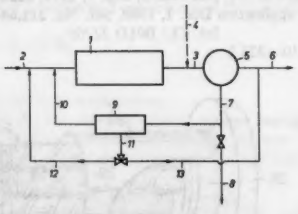
Carl-Heinz Gregor, Germering; Hans Reimann, Munich, and Alfred Wildmoser, Haar, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation of Ser. No. 972,627, Dec. 22, 1978, abandoned. This application Jun. 25, 1980, Ser. No. 162,862

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757742

Int. Cl.³ C02F 3/12

U.S. Cl. 210—608 **6 Claims**



1. In an activated sludge process for the biological purification of wastewater, said activated sludge process comprising an aeration stage wherein undesirable bulking sludge is formed in addition to normal activated sludge, followed by a sedimentation stage wherein a thickened sludge is separated from purified wastewater, the improvement wherein all the undesirable bulking sludge formed in the aeration stage is passed to the sedimentation stage and is contained in said thickened sludge, withdrawing said thickened sludge from the sedimentation stage and subjecting at least a fraction of said thickened sludge to sufficiently high centrifugal forces so as to destroy substantially all the microorganisms causing the bulking sludge without substantially destroying the microorganisms required for the normal activated sludge, and recycling to said aeration stage an activated sludge consisting essentially of the normal activated sludge obtained from the centrifugation step.

4,341,633

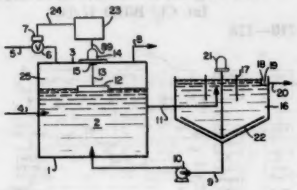
SURFACE AERATION SYSTEM WITH CONTROLLED AERATOR SUBMERGENCE

Thomas E. Walder, Newfane, N.Y., assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation of Ser. No. 551,681, Oct. 17, 1974, abandoned. This application Aug. 30, 1978, Ser. No. 938,029

Int. Cl.³ C02F 3/16, 3/26

U.S. Cl. 210—614 **7 Claims**



1. In an apparatus for controlled contacting of oxygen-containing gas and BOD-containing liquid including: a BOD-containing liquid storage enclosure; at least two separate oxygenation chambers within said storage enclosure each having walls extending substantially to the floor of said storage enclosure and also extending above the BOD-containing liquid level, and covers over the upper ends of said chamber walls to form gas spaces; conduit means for introducing oxygen-containing feed gas at superatmospheric pressure to one of said oxygenation chambers; conduit means for introducing BOD-containing feed liquid to the one oxygenation chamber; surface aeration means positioned within at least one of said oxygenation chambers for mixing and continuously recirculating BOD-containing liquid against said oxygen-containing gas for oxygenation of said liquid; restricted passageway means for flow of unconsumed oxygen gas from the gas space of said one oxygenation chamber to a second oxygenation chamber; restricted flow means for transferring the first oxygenated liquid to said second oxygenation chamber; gas vent conduit means for discharging oxygen-depleted gas from a final oxygenation chamber; flow control means for regulating the flow rate of oxygen-containing gas passed through said chambers; and liquid discharge means having an inlet positioned for submergence in the liquid in said final oxygenation chamber for discharging finally-oxygenated liquid from said final chamber, the improvement of means for maintaining liquid level in the oxygenation chambers at a predetermined value, comprising: means for sensing the power consumption of at least one of said surface aeration means; and means for transmitting signals from said power consumption sensing means to said flow control means for adjustment of the flow rate of gas passed through said chambers so as to vary the gas pressure in the chambers in response to the sensed power consumption level, such that (1) when the liquid level in a chamber falls below the predetermined value and sensed power consumption and gas pressure decrease, the flow rate of gas passed through the chamber is decreased to further reduce the gas pressure in the chamber and cause the liquid level to rise to the predetermined value and (2) when the liquid level in a chamber rises above the predetermined value and sensed power consumption and gas pressure increase, the flow rate of gas passed through the chambers is increased to further increase the gas pressure in the chambers and cause the liquid level to be depressed to the predetermined value, thereby maintaining liquid level and power consumption in the chambers at predetermined values, and wherein said flow control means are disposed in said feed gas conduit means to regulate the flow of oxygen-containing feed gas introduced to said one oxygenation chamber, and further comprising discharge flow control means in said vent conduit means; means for sensing the oxygen concentration of the oxygen-depleted gas in said vent conduit; and means for transmitting signals from said oxygen concentration sensing means to said vent conduit discharge flow control means for

adjustment of the discharge gas flow rate to maintain a predetermined oxygen concentration in said oxygen-depleted discharge gas.

3. In a process for continuously contacting BOD-containing liquid with oxygen-containing gas in the presence of activated sludge by the steps of: flowing BOD-containing feed liquid and oxygen-containing feed gas at superatmospheric pressure, and activated sludge into a first enclosed covered oxygenation zone containing a body of liquid and a body of gas thereabove; mixing said BOD-containing water and activated sludge as first liquor and feed gas and simultaneously continuously recirculating said liquor by projecting it into the overlying gas to effect surface aeration contacting of said gas and liquor in the zone and form first oxygenated liquor and first unconsumed oxygen-containing gas; discharging said first oxygenated liquor and first unconsumed oxygen-containing gas from said first zone; mixing the discharged first unconsumed oxygen-containing gas with the discharged first oxygenated liquor and simultaneously continuously recirculating said first oxygenated liquor by projecting it into the overlying gas to effect surface aeration contacting of said first gas and first liquor in at least a second enclosed covered oxygenation zone containing a body of liquid and a body of gas thereabove to form at least a second oxygenated liquor and second unconsumed oxygen-containing gas of lower oxygen purity than said first gas; discharging oxygen-depleted gas from a final enclosed covered aeration zone; and separately discharging finally oxygenated liquor from said final oxygenation zone through a submerged discharge opening, the improvement of maintaining liquid level in the oxygenation zones at a predetermined value by the steps comprising: (a) sensing the power consumed for mixing and recirculation in at least one of the surface aeration contacting steps; (b) converting the power consumption sensing into a transmittable signal; and (c) adjusting the flow rate of gas passed through said oxygenation zones by means of the transmitted power consumption signal so as to vary the gas pressure in the oxygenation zones in response to the sensed power consumption level, such that (1) when the liquid level in an oxygenation zone falls below the predetermined value and sensed power consumption and gas pressure decrease, the flow rate of gas passed through the oxygenation zones is decreased to further reduce the gas pressure in the oxygenation zones and cause the liquid level to rise in the predetermined value and (2) when the liquid level in an oxygenation zone rises above the predetermined value and sensed power consumption and gas pressure increase, the flow rate of gas passed through the oxygenation zone is increased to further increase the gas pressure in the oxygenation zones and cause the liquid level to be depressed to the predetermined value, whereby liquid level and power consumption in the oxygenation zones are maintained at predetermined values, and wherein the flow rate of the oxygen-containing feed gas flowed into said first oxygenation zone is adjusted as the gas flow rate adjusting of step (a), and comprising the further steps of: sensing the oxygen concentration of the oxygen-depleted gas discharged from said final oxygenation zone; converting said oxygen concentration sensing into a transmittable signal; and adjusting the discharge flow rate of said oxygen-depleted gas by means of the transmitted oxygen concentration signal to maintain a predetermined oxygen concentration in said oxygen-depleted gas.

4,341,634

ANALYTICAL METHOD OF HYDROCARBON COMPOUNDS

Susumu Matsushita; Yoshimitsu Tada, both of Shin-nanyo, and Tetsuo Ikushige, Yamaguchi, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-nanyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,613

Claims priority, application Japan, Dec. 21, 1979, 54-165604

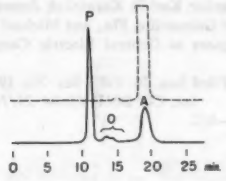
Int. Cl.³ B01D *15/08*

U.S. Cl. 210—656 **5 Claims**

1. A quantitative analytical method for separating a sample of hydrocarbon compounds contained in a solution into three components, namely, saturates, unsaturates and aromatics present in the sample, by means of high speed liquid chromatography employing two columns connected in series, the first column being one into which a porous silica type packing material is packed and the second column being one into which a silver-containing silica type packing material is packed, which comprises the steps of:

(a) introducing the liquid sample into the first column,

(b) thereafter introducing into the first column as the eluent liquid an organic chlorine-containing type solvent or a



mixed solvent composed of an organic chlorine-containing type solvent and up to 1 vol % of a hydrocarbon type solvent;

(c) allowing the introduced liquids to pass through both columns in series; and

(d) introducing the eluate from the second column into a detector to detect it quantitatively for saturates, unsaturates and aromatics, the three components having been chromatographicaly separated by steps (a), (b) and (c).

4,341,635

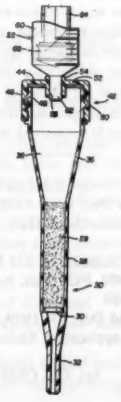
MICROCHROMATOGRAPHIC COLUMN AND METHOD

Tipton Golias, Beaumont, Tex., assignor to Helena Laboratories Corporation, Beaumont, Tex.

Filed Dec. 16, 1980, Ser. No. 216,888

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—656 **8 Claims**



6. A method of separating fluid solutions in a chromatographic column, said column having an open end for receiving the fluid solution, finely divided ion exchange particles supported in said column for separating the fluid solution and a cap received on said column open end in sealed relation having an elongated smooth, generally cylindrical inlet port, said method comprising:

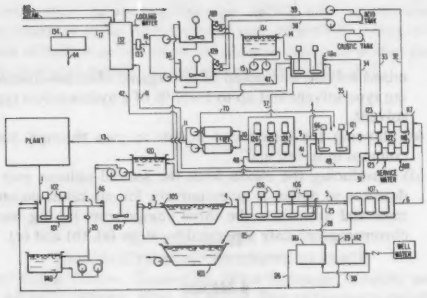
a. introducing the fluid solution to be separated and an elutant into said column, through said open end, and

b. inserting the discharge tip of a hand operated pressure means into said cap inlet port in sealed relation and creating a pressure drop across said ion exchange particles by compressing said hand operated pressure means to force said eluent through said ion exchange particles, thereby reducing the time required for chromatographic separation.

4,341,636
TREATMENT OF WASTEWATER

Ursula M. Harder; Karl D. Kaswinkel; James W. Gould; Jon K. West, all of Gainesville, Fla., and Michael J. Wynn, Latham, N.Y., assignors to General Electric Company, Gainesville, Fla.

Filed Sep. 26, 1980, Ser. No. 191,191
Int. Cl.³ B01D *15/04, 23/14*
U.S. Cl. 210—662 **27 Claims**



1. A process for treating water which contains undesired levels of at least heavy metals, alkali metals, and organic materials which comprises:

(a) measuring the pH of said water and adjusting said pH to about 10–11;

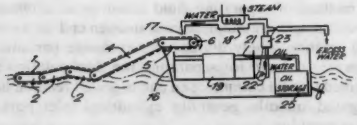
(b) subjecting said water from step (a) to filtration treatment for removal of heavy metals therefrom;

(c) subjecting the water to ion-exchange treatment wherein said ion-exchange treatment includes first subjecting said water to cation-exchange for removal of alkali metals therefrom; then subjecting the water to treatment with activated carbon for removal of organic material therefrom; and then subjecting the water to treatment with anion exchange for removal of acid ions therefrom.

4,341,637
REMOVING AND COLLECTING OIL

Peter B. Smith, Saltersford Hall, Holmes Chapel, Cheshire, England

PCT No. PCT/GB79/00215, § 371 Date Aug. 19, 1980, § 102(e) Date Aug. 12, 1980, PCT Pub. No. WO80/01293, PCT Pub. Date Jun. 26, 1980
PCT Filed Dec. 19, 1979, Ser. No. 199,467
Claims priority, application United Kingdom, Dec. 19, 1978, 49122/78
Int. Cl.³ C02F *1/40*
U.S. Cl. 210—662 **7 Claims**



1. Apparatus for the removal and recovery of pollutant oil and the like floating on the surface of a body of water, comprising:

recovery means for withdrawing pollutant oil and the like with possible additional water from the water surface and carrying it to a recovery station, said recovery means comprising an endless belt formed of expandable mesh material, and having oleophilic properties, which belt is disposed to pass round a plurality of pontoon sections floating at or adjacent the water surface and then out of the water to said recovery station,

means for removing the pollutant oil and the like including means for spraying hot water over said recovery means to remove such pollutant oil and the like at said recovery station and means for expanding the mesh of the belt in a direction at right angles to the direction of movement thereof to faciliate detachment of pollutant oil and the like from said belt by said hot water spray;

a receiving tank for receiving the oil/water washings resulting from said means for removing;

an oil/water separator/coalescer for separating oil containing only a minor quantity of water from the washings;

means for receiving such separated oil;

means for recirculating water from said separator/coalescer and directing said recirculated water to a heating means and then to said means for spraying;

and means for returning any excess purified water from said separator/coalescer to said body of water.

4,341,638
PURIFICATION OF PHOSPHORIC ACID

William W. Berry, Lakeland, and Hanceford L. Allen, Bartow, both of Fla., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Oct. 17, 1979, Ser. No. 85,677
The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.
Int. Cl.³ C02F *1/56;* **C01B** *25/16;* **B03B** *1/00;* **B03D** *3/06*
U.S. Cl. 210—666 **6 Claims**

1. A process for purifying phosphoric acid comprising the steps of:

(a) cooling the phosphoric acid;

(b) mixing said phosphoric acid with a body feed agent to cause floccules of suspended impurities to form;

(c) adding powdered carbon to the mixture of step (b) in an amount sufficient to absorb remaining impurities in the acid;

(d) adding a flocculating agent to the mixture of step (c) in an amount sufficient to cause said floccules to settle; and

(e) separating the supernatant acid solution from the settled sludge.

4,341,639
WASTEWATER TREATMENT

Scott A. Santora, Hammonton, N.J., assignor to Waste Conversion Technology, Inc., Camden, N.J.

Division of Ser. No. 6,271, Jan. 25, 1979, Pat. No. 4,251,367. This application Feb. 2, 1981, Ser. No. 230,714
Int. Cl.³ C02F *1/28*
U.S. Cl. 210—673 **1 Claim**

1. A wastewater treatment process comprising the steps of:

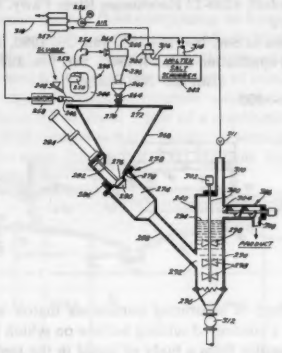
mechanically separating solid organic sludge from the wastewater thereby producing a liquid product;

introducing at least part of said sludge into a molten salt carbonizer, and treating said part of said sludge therein to produce activated carbon; and

introducing at least part of the activated carbon so produced into said wastewater and maintaining contact between said activated carbon and said wastewater for a sufficient time to permit adsorption of dissolved organic substances to take place;

in which said activated carbon is introduced into said wastewater before the mechanical separating step, in which at

least part of the carbon in said wastewater is separated therefrom in said mechanical separating step along with said solid organic sludge, in which at least part of said part of the carbon thus separated from the wastewater is introduced along with sludge into said molten salt carbonizer



and in which heavy metal compounds are separated from the carbon in the molten salt carbonizer by gravitational settling of heavy metal compound in a molten salt bath while reactivated carbon and activated carbon formed from sludge float to the surface of the bath.

4,341,640

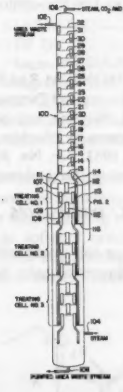
UREA HYDROLYSIS

Norris J. Landis, Cleveland Heights, Ohio, assignor to Standard Oil Company, Ohio

Continuation of Ser. No. 726,893, Sep. 27, 1976, abandoned. This application Nov. 1, 1979, Ser. No. 90,202

Int. Cl.³ B01D *3/26*; C02F *1/02*

U.S. Cl. 210—752 **8 Claims**



1. In the process for the purification of an aqueous urea waste stream in a vessel comprising hydrolyzing the urea to reduce the concentration of the urea in the waste stream and stripping the products of the urea hydrolysis and other gases from the waste stream with steam, the improvement co...prising conducting the hydrolysis in at least one treating cell comprising an inner cylinder located within the vessel, having inside and outside surfaces, having one or more stripping trays connected to the inside surface, and a liquid holding zone wherein hydrolysis is performed, located between the outer surface of the cylinder and the vessel that is maintained substantially separate from the vapor streams.

4,341,641

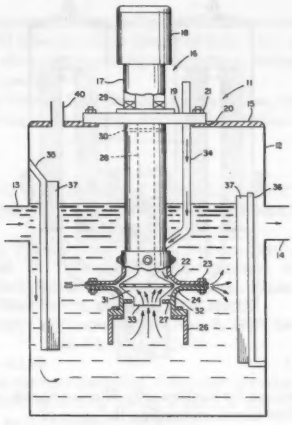
PROCESS FOR TREATING CYANIDE AND CYANATE CONTAINING WASTEWATERS

Frederick C. Novak, South Huntington, N.Y., assignor to TII Corporation, Lindenhurst, N.Y.

Continuation of Ser. No. 931,958, Aug. 8, 1978, abandoned. This application Jan. 15, 1980, Ser. No. 112,175

Int. Cl.³ C02F *1/78*

U.S. Cl. 210—752 **38 Claims**



1. A process for treating an aqueous cyanide-containing influent consisting essentially of:

(a) providing an ozone-contacting zone having an operating turbine gas injector associated therewith, said injector comprising:

a hollow casing extending into said zone having an enlarged section at the lower end thereof, said enlarged section having an annular elongated gap which communicates with said zone;

a shaft rotatably mounted in said casing;

a turbine-bladed impeller rotor mounted on said shaft and extending into said enlarged section, said rotor having a liquid intake section;

means for rotating said shaft; and

a gas inlet communicating with said casing above said enlarged section;

(b) introducing said influent to said ozone-contacting zone; at least a portion of said influent being introduced to said liquid intake section;

(c) introducing an ozone-containing gas to said gas inlet;

(d) mixing by spinning said impeller at least a portion of said influent with said ozone-containing gas in said enlarged section to form a stream of bubbles of ozone-containing as in said influent and injecting said stream into said zone;

(e) withdrawing a cyanide-depleted effluent from said zone;

(f) combining at least a portion of said cyanide depleted effluent with said cyanide-containing influent; and

(g) repeating steps (b) to (e).

4,341,642

PROCESS AND AN APPARATUS FOR CONTINUOUSLY FILTERING LIQUIDS

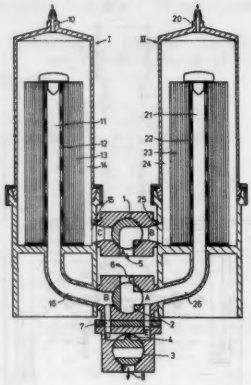
Günther Koepke, Odenthal; Hans Frenken, Odenthal-Osenau, and Josef Friedsam, Langenfeld, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 24, 1981, Ser. No. 295,809

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032690

Int. Cl.³ B01D *37/00*

U.S. Cl. 210—767 6 Claims



1. A process for continuously filtering liquids in at least two candle filter means comprising the steps of

introducing a liquid through a first control means into a first candle filter means, filtering said introduced liquid in said first candle filter means from an outer chamber of said first filter means to an inner chamber of said first filter means,

filtered liquid being passable from the inner chamber of the first filter means through a second control means into an inner chamber of a second candle filter means,

a lesser flow of filtered liquid from the inner chamber of the first filter means being passable through a by-pass control means into the inner chamber of said second filter means,

said by-pass control means being adjustable so that the filtered liquid from the inner chamber of the first filter means is drainable through said by-pass control means,

said flow of fluid being reversible by introducing a liquid through said first control means into an outer chamber of said second candle filter means,

filtering said introduced liquid in said second filter means from the outer chamber to an inner chamber,

said filtered liquid being removable from the inner chamber of said second candle filter means by passing through said second control means to the outlet from the combination,

said by-pass control means being adjustable so that the filtered liquid from the inner chamber of the second filter means is drainable through said by-pass control means,

including the steps of changing the filtering action from the first candle filter means to the second candle filter means comprising

first passing filtered liquid from the first candle filter means through the second control means to the outlet,

second passing unfiltered liquid into the outer chamber of the second candle filter means through the first control means,

third passing filtered liquid out of the inner chamber of the second candle filter means through the second control means to the outlet,

draining liquid out of the first candle filter means through the by-pass control means to outside the combination,

and including the steps of passing liquid through a candle filter means and then flowing the liquid away and venting the liquid from said filter means.

4,341,643

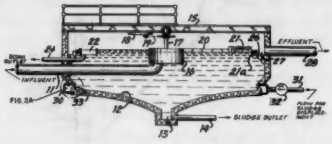
SETTLING TANKS FOR WASTE DISPOSAL

Bernard Brodoff, 4200-22 Hutchinson River Pkwy. East, Bronx, N.Y. 10475

Continuation of Ser. No. 164,789, Jun. 30, 1980, abandoned. This application Jul. 14, 1981, Ser. No. 283,150

Int. Cl.³ B01D *21/02*

U.S. Cl. 210—803 8 Claims



7. A method of separating particulate matter in a settling tank having a contoured settling surface on which the particulate matter settles from a body of liquid in the tank, said contoured surface being substantially below the normal level of the liquid in the tank, comprising supplying liquid containing the particulate matter to the settling tank for removal of the particulate matter therefrom, discharging from the upper region of the settling tank the liquid from which the particulate matter has been removed to maintain a level of liquid in the tank, discharging the particulate matter at the downstream end of said contoured surface, introducing a fluid substantially below the normal level of the liquid in the tank and at substantially the level of said upstream end of the contoured settling surface and flowing said fluid across the contoured surface utilizing the Coanda effect to cause the fluid to cling to the contoured surface and displace the particulate matter settled on the contoured surface before discharging the particulate matter at the downstream end of the contoured surface.

4,341,644

QUATERNARY AMMONIUM SALT MIXTURES

Yvan Bisschops, Antwerp; Emmanuel Draguez Tripels de Hault, Waterloo; Aleksef Jnoff, Nivelles, and Alain Delaby, Brussels, all of Belgium, assignors to Lilachim, Brussels, Belgium

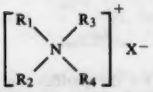
Filed Sep. 28, 1981, Ser. No. 306,457

Claims priority, application Luxembourg, Oct. 10, 1980, 82836

Int. Cl.³ D06M *13/46*

U.S. Cl. 252—8.8 9 Claims

1. Quaternary ammonium salt compositions comprising a mixture of quaternary ammonium salts having the general formula



wherein R_1 and R_2 are aliphatic radicals having from 10 to 22 carbon atoms, and wherein (a) from 40 to 75% by weight of the entirety of these radicals are saturated aliphatic straight chains, and (b) from 5 to 45% by weight of the entirety of these radicals are unsaturated aliphatic chains, and (c) from 3 to 55% by weight of the entirety of these radicals are branched aliphatic chains, the sum of a+b+c being equal to 100, and wherein R_3 and R_4, which may be identical or different, are alkyl radicals having from 1 to 4 carbon atoms, and X is a conventional quaternary anion.

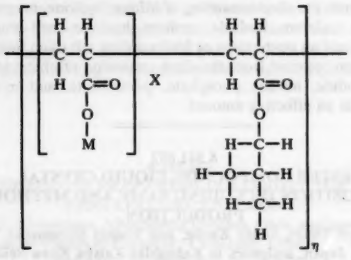
4,341,645

AQUEOUS DRILLING AND PACKER FLUIDS

Steven R. Blattel, and Larry W. Hilscher, both of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Jan. 16, 1981, Ser. No. 225,671
Int. Cl.³ C09K 7/02
U.S. Cl. 252—8.5 C 13 Claims

1. An aqueous drilling fluid comprising: an aqueous phase; a clay material suspended in the aqueous phase; from about 1 to about 10 ppb. of a water soluble lignosulfonate which contains a cation selected from the group consisting of iron, chromium, aluminum, copper, zirconium, titanium, and mixtures thereof; and from about 0.5 to about 5 ppb of a copolymer of acrylic acid and hydroxypropyl acrylate having an average molecular weight in the range from about 5000 to about 10,000 and the following structure:



where n is the degree of polymerization to produce the molecular weight, x represents the mole ratio of acrylic acid salt to hydroxypropyl acrylate in the polymer, and M represents the salt forming cation which is selected from the group consisting of ammonium, the alkali metals, and mixtures thereof.

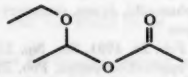
4,341,646

1-ETHOXY-1-ETHANOL ACETATE AND USES THEREOF FOR AUGMENTING OR ENHANCING THE AROMA OF TASTE OF CONSUMABLE MATERIALS

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 176,111, Aug. 7, 1980, Pat. No. 4,296,137.
This application Jul. 6, 1981, Ser. No. 280,272
Int. Cl.³ D06M 13/18
U.S. Cl. 252—8.9 1 Claim

1. The process for augmenting or enhancing the aroma of a drier-added fabric softener article or a fabric softener composition comprising the step of adding to at least one component of a drier-added fabric softener article or to a fabric softener composition, an aroma augmenting, modifying or enhancing quantity of 1-ethoxy-1-ethanol acetate having the structure:



4,341,647

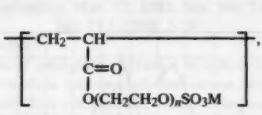
PROCESS FOR SECONDARY RECOVERY

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Division of Ser. No. 75,635, Sep. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 916,985, Jun. 19, 1978, abandoned. This application Feb. 5, 1981, Ser. No. 231,646
Int. Cl.³ E21B 43/22
U.S. Cl. 252—8.55 D 9 Claims

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:

(A) injecting into the formation via an injection well a drive fluid comprising water having dissolved therein about 0.01 to about 5.0 weight percent of a sulfated, ethoxylated acrylic acid polymer having recurring units of the formula:



wherein the number average molecular weight is about 3,000 to about 50,000 wherein n is an integer of from 1 to 5 and M is selected from the group consisting of hydrogen, sodium, potassium and ammonium.

(B) forcing the said fluid through the formation, and,

(C) recovering hydrocarbons through the production well.

4,341,648

METHOD FOR MANUFACTURING MAGNETIC POWDER FOR HIGH DENSITY MAGNETIC RECORDING

Osamu Kubo; Tadashi Ido; Tutomu Nomura, and Koichiro Inomata, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 3, 1980, Ser. No. 203,153
Claims priority, application Japan, Nov. 8, 1979, 54-143859
Int. Cl.³ C04B 35/26
U.S. Cl. 252—62.63 12 Claims

1. A method for manufacturing a magnetic powder for high density magnetic recording having a particle size within the range of 0.01 to 0.3 microns, comprising:

mixing, together with a glass forming substance, metal oxide or metal oxide precursor components of a substituted ferrite having the formula:

$$AFe_{12-2x}Co_xM_xO_{19} \text{ or } AFe_{12-3/2x}Co_xM\frac{1}{2}xO_{19}$$

wherein A is at least one element selected from the group consisting of barium, strontium, lead and calcium, M is at least one tetravalent element selected from the group consisting of titanium and germanium or at least one pentavalent element selected from the group consisting of vanadium, niobium, antimony and tantalum, and x is a value from 0.5 to 1.1;

melting the mixture into a molten material;

rapidly cooling the molten material to obtain an amorphous material;

heat-treating the amorphous material in the range between 700° and 850° C. to precipitate a substituted hexagonal ferrite as mutually separated fine particles in the amorphous material; and

separating the fine particles from the amorphous material wherein said metal oxide or metal oxide precursor components are mixed in an amount sufficient to provide, as said fine particles, a substituted ferrite of said formulation.

4,341,649

ENERGY STORAGE MEDIUM AND METHOD

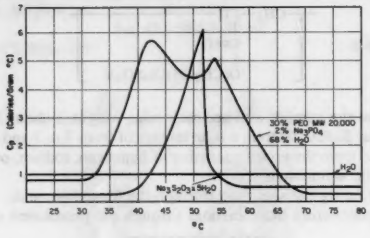
Edward J. Burns, and Geoffrey T. White, both of Omaha, Nebr., assignors to InterNorth, Inc., Omaha, Nebr.

Filed Mar. 16, 1981, Ser. No. 243,760
Int. Cl.³ C09K 5/06
U.S. Cl. 252—70 4 Claims

1. A method of storing energy which comprises heating a solution of polyethylene oxide, water, and a salt which causes gelation of polyethylene oxide and water to a temperature at or below about 90° C., thereby forming a gel with a high energy state.

3. A method of energy storage and transfer which comprises the steps of:

(a) contacting a solution of polyethylene oxide, water, and a salt which causes gelation of polyethylene oxide in water with a warm medium such that the temperature of the solution is raised to at or below about 90° C., thereby forming a gel with a high energy state,



(b) storing the energy transferred from the warm medium in the gel for a period of time, and

(c) contacting the gel with a cool medium whereby the gel goes through a phase change to liquid form and the energy stored therein is transferred to the cool medium.

4,341,650

CHEMICALLY STABILIZED AZULMIC ACIDS, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Kuno Wagner, Leverkusen, and Kurt Findeisen, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

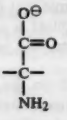
Division of Ser. No. 64,350, Aug. 3, 1979, Pat. No. 4,263,781. This application Nov. 28, 1980, Ser. No. 210,943

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836154

Int. Cl.³ C08F *4/00*; C08G *18/72*; C08L *61/20, 61/32*

U.S. Cl. 252—182 **1 Claim**

1. A method of synthesizing a formose sugar mixture from an aqueous formalin solution of high strength using a catalyst, characterized in that the catalyst is an azulmic acid product comprising azulmic acid, stabilized by reaction with an aminoplast-forming agent and a carbonyl compound or, optionally a chemically modified, condensation product thereof, containing from 0.5 to 55% by weight of ionic groups of the general formula



(F1)

in which

R represents hydrogen, ammonium, one equivalent of a protonated or quaternized organic nitrogen base or of a sulfonium cation or one equivalent of a metal cation,

and containing from 0.5 to 15 percent by weight of groups formed by decarboxylation reactions, of the formula

(F2)

which azulmic acid product also contains calcium hydroxide, calcium carbonate, lead hydroxide, lead oxide, aluminum hydroxide, magnesium hydroxide, zinc hydroxide, tin hydroxide or a mixture of any of these.

4,341,651

COMPOSITIONS AND METHODS FOR GENERATION OF GASES CONTAINING HYDROGEN OR HYDROGEN ISOTOPES

Werner F. Beckert, Las Vegas, Nev.; William H. Barber, Brandywine, Md.; Richard E. Bowen, Woodbridge, and Ottmar H. Dengel, Front Royal, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 26, 1980, Ser. No. 181,526

Int. Cl.³ C01B *1/07*

U.S. Cl. 252—188.25 **19 Claims**

1. A composition for generating hydrogen, hydrogen isotopes, and mixtures thereof consisting of a metal hydride selected from the class consisting of lithium hydride, magnesium hydride, calcium hydride, sodium hydride, and mixtures thereof; and an ammonium or hydrazinium salt of an inorganic acid anion selected from the class consisting of chloride, bromide, iodide, nitrate, phosphate, perchlorate, and mixtures thereof in an effective amount.

4,341,652

ESTER COMPOUNDS, LIQUID CRYSTAL COMPOSITION INCLUDING SAME AND METHOD OF PRODUCTION

Katsumori Takei; Sadao Kanbe, and Yoshio Shionozaki, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

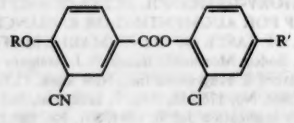
Filed Jul. 18, 1980, Ser. No. 171,938

Claims priority, application Japan, Jul. 20, 1979, 54/93082; Dec. 28, 1979, 54/171819

Int. Cl.³ C09K *3/34*; G02F *1/13*; C07C *121/60, 121/75*

U.S. Cl. 252—299.5 **21 Claims**

1. An ester compound represented by the general formula



wherein R and R' are alkyl groups selected from the group consisting of straight-chain alkyl groups having from one to eight carbon atoms for defining a (2'-chloro-4'-n-alkylphenyl)-3-cyano-4-n-alkoxybenzoate.

4,341,653

LIQUID-CRYSTALLINE 4-ALKYLCYCLOHEXYL ESTERS

Takashi Inukai; Kenji Furukawa; Shigeru Sugimori, and Hideo Sato, all of Yokohamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

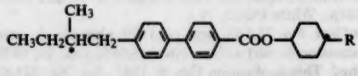
Filed Feb. 26, 1981, Ser. No. 238,209

Claims priority, application Japan, Feb. 29, 1980, 55-24865

Int. Cl.³ C09K *3/34*; G02F *1/13*; C07C *69/75, 69/76*

U.S. Cl. 252—299.63 **4 Claims**

1. Trans-4''-alkylcyclohexyl esters of 4'-(2-methyl-butyl)-4-biphenylcarboxylic acid expressed by the general formula



(I)

wherein R represents a straight chain alkyl group having 1 to 10 carbon atoms, and the symbol * represents an asymmetric carbon atom.

4,341,654

GETTER FOR MELT-GROWN SCINTILLATOR INGOT

Carl F. Swinehart, University Heights, Ohio, assignor to The Harshaw Chemical Company, Cleveland, Ohio

Division of Ser. No. 931,323, Aug. 7, 1978, Pat. No. 4,277,303. This application Mar. 9, 1981, Ser. No. 241,566

Int. Cl.³ C09K 11/12

U.S. Cl. 252—301.4 H 6 Claims

1. A scintillator crystal having a characteristic resistance to visible darkening when exposed for a period of one minute to a 30 watt ultraviolet lamp emitting predominantly 3600 A wavelength radiation, said crystal consisting essentially of an alkali metal halide, optionally activated with an effective amount of an activator to exhibit scintillation, and having distributed therein from about 5 parts to about 1000 parts per million by weight (ppm) of melt, of each component of a combination getter consisting essentially of reactive oxides of boron as one component, and an insoluble but active silicon dioxide as the other component, at least some of each component being present as a reaction product with said melt, and said ingot exhibiting borate absorption in its transmission spectrum.

4,341,655

METHOD OF PREPARING COLLOIDAL SOL OF PENTAVALENT ANTIMONY

John G. Richardson, Middleburg Heights, Ohio, assignor to The Harshaw Chemical Company, Cleveland, Ohio

Filed Mar. 28, 1980, Ser. No. 135,046

Int. Cl.³ B01J 13/00

U.S. Cl. 252—313 R 5 Claims

1. A process for preparing a colloidal aqueous sol of pentavalent antimony containing increased amounts of metal which comprises the steps of

(a) preparing a mixture of a substantially water-insoluble crystalline metal antimonate and an aqueous pentavalent antimony sol,

(b) agitating said mixture in the absence of cation exchange resins for a period of time sufficient to convert at least a portion of the crystalline metal antimonate to colloidal antimony, and

(c) recovering the colloidal pentavalent antimony sol containing an increased amount of metal.

4,341,656

FOAM INHIBITORS AND THEIR USE FOR DEFOAMING AQUEOUS SYSTEMS

Heinz Abel, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 25, 1979, Ser. No. 88,265

Claims priority, application Switzerland, Nov. 3, 1978, 11345/78

Int. Cl.³ B01D 19/04

U.S. Cl. 252—321 19 Claims

1. A foam inhibitor for aqueous systems which comprises

(1) 1 to 10% by weight of a fatty acid salt of a polyvalent metal,

(2) 1 to 6% by weight of an anionic surfactant or of a non-ionic reaction product of an alcohol or alkylphenol with an alkylene oxide,

(3) 0.5 to 10% by weight of an aliphatic alcohol of 5 to 10 carbon atoms or of a mixture of such alcohols, and

(4) 74 to 97.5% of a hydrophobic organic solvent or solvent mixture which is different from component (3).

17. A method of defoaming aqueous systems, which comprises treating said systems with a foam inhibitor as claimed in claim 1 or with a foam inhibitor preparation as claimed in claim 15.

4,341,657

USE OF QUATERNIZED DERIVATIVES OF POLYMERIZED PYRIDINES AND QUINOLINES AS CORROSION INHIBITORS

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 32,044, Apr. 23, 1979, Pat. No. 4,297,484. This application Mar. 12, 1981, Ser. No. 242,863

Int. Cl.³ C09K 3/00

U.S. Cl. 252—390 14 Claims

1. A process of inhibiting corrosion which comprises treating a system with a quaternized derivative of polymerized pyridine or quinoline compounds, which compounds prior to polymerization are selected from the group consisting of pyridine, 2-methyl pyridine, 4-methyl pyridine, 4-phenyl pyridine, 4-ethyl pyridine, 2-hydroxypyridine, 2,4-lutidine, quinoline, 2-methyl quinoline and 4-methyl quinoline, the nitrogen atoms of which are quaternized by treating said polymerized compounds with a quaternizing agent selected from the group consisting of methyl iodide, ethyl iodide, propyl iodide, ethyl bromide, benzyl bromide, butyl bromide, dodecyl bromide, benzyl chloride, dodecyl benzyl chloride, ethyl bromoacetate, dimethyl sulfate, tetradecyl bromide, and octyl bromide.

4,341,658

CATALYST FOR REACTING PHENOLIC HYDROXYL GROUPS WITH EPOXY GROUPS

Georgia A. Monnerat; George E. Ham; Thomas J. Hairston, all of Lake Jackson, Tex., and Melvin J. Hatch, Socorro, N. Mex., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 139,071, Apr. 10, 1980, Pat. No. 4,276,406. This application Dec. 10, 1980, Ser. No. 214,936

Int. Cl.³ B01J 31/08, 31/26, 29/04

U.S. Cl. 252—428 8 Claims

1. A catalyst resulting from the treatment of (A) a solid substrate containing a plurality of ion-exchangeable cations treated with (B) a polymer containing a plurality of quaternary onium cations associated with a reactive anion; wherein components (A) and (B) are employed in quantities such that the resultant catalyst contains quaternary onium cation-anion sites.

2. The catalyst of claim 1 wherein component (A) is a cation exchange resin.

4. The catalyst of claim 1 wherein component (A) is an inorganic substrate.

5. The catalyst of claim 4 wherein said inorganic substrate is a zeolite.

4,341,659

CATALYTIC COMPOSITION

Yoichi Kageyama, Isehara; Masakatsu Hatano, Yokohama; Toru Koyama, Machida; Takao Kaneko; Masayosi Murayama, both of Yokohama, and Kazunori Oshima, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Filed Jul. 22, 1980, Ser. No. 171,242

Int. Cl.³ B01J 27/14, 27/24, 29/16, 29/00

U.S. Cl. 252—435 3 Claims

1. A catalytic composition represented by the formula:

$$(Mo)_a(W)_b(Bi)_c(Pb)_d(Sb)_e(K)_f(P)_g(O)_h$$

in which a, b, c, d, e, f, g and h stand for the numbers of atoms for molybdenum, tungsten, bismuth, lead, antimony, potassium, phosphorus and oxygen elements, respectively, wherein, given that $a+b=12$,

$0 \leqq b \leqq 7$

$0.4 \leqq c \leqq 7$

$2 \leqq d \leqq 12$

$0.005 \leqq e/a \leqq 1.14$

$0 \leqq f/a \leqq 0.136$

$0 \leqq g/a \leqq 0.54$, and

h is one-half the sum of the products of the valences and the

numbers of atoms for the individual constituent elements other than oxygen.

4,341,660

CATALYTIC CRACKING CATALYST

Ralph J. Bertolacini, Chesterton, and William L. Forsythe, Jr., Munster, both of Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 158,613, Jun. 11, 1980, which is a continuation of Ser. No. 963,991, Nov. 27, 1978, abandoned, which is a continuation of Ser. No. 664,057, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 447,753, Mar. 4, 1974, abandoned. This application Jan. 16, 1981, Ser. No. 225,712

Int. Cl.³ B01J *29/12, 29/16*

U.S. Cl. 252—455 Z 11 Claims

1. A composition of matter comprising a particulate physical mixture of:

(a) particulate solid cracking catalyst for cracking hydrocarbons; and

(b) particulate solid oxidation promoter comprising an amount effective to promote the oxidation of carbon monoxide to carbon dioxide of platinum group metal or rhenium supported on a substrate which is substantially inert to hydrocarbon cracking and substantially free of crystalline aluminosilicate zeolite, said amount of platinum group metal or rhenium being in the range from about 0.01 part per million up to less than about 1 part per million based on the weight of (a).

4. A composition of claim 1 wherein (a) contains crystalline aluminosilicate zeolite having pores in the size range of about 6 to 20 Angstrom units.

4,341,661

CATALYSTS FOR REDUCING CO AND SO_x EMISSIONS FROM CATALYTIC CRACKING UNITS

Kenneth Baron, Diamond Bar, and Dennis P. McArthur, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 109,756, Jan. 7, 1980, Pat. No. 4,311,581. This application Jan. 26, 1981, Ser. No. 228,266

Int. Cl.³ B01J *23/10, 29/08*

U.S. Cl. 252—455 Z 24 Claims

1. A composition of matter comprising a mixture of solid particles of bastnaesite and particles having catalytic activity for cracking hydrocarbons at an elevated temperature above about 750° F., said bastnaesite being a natural bastnaesite or a treated natural bastnaesite containing a rare earth fluorocarbonate or rare earth oxyfluoride.

2. A composition of matter as defined in claim 1 wherein said catalytically active particles comprise crystalline aluminosilicate zeolite particles dispersed in a porous refractory oxide matrix, said zeolite particles having been ion exchanged to contain less than about 4.0 percent by weight of alkali metals, calculated as the metals, and to contain hydrogen ions and rare earth element ions.

4,341,662

METHOD OF CATALYTICALLY COATING LOW POROSITY CERAMIC SURFACES

William C. Pfefferle, 51 Woodland Dr., Middletown, N.J. 07748

Filed Apr. 11, 1980, Ser. No. 139,340

Int. Cl.³ B01J *21/04, 23/10, 23/40*

U.S. Cl. 252—462 5 Claims

1. The method of catalytically coating low porosity ceramic surfaces with a catalytically active precious metal film which comprises the steps of applying a coating comprising a solution of a solvent, a precious metal compound and a second metal compound decomposable into a refractory metal and of heating said coating in air to a temperature above the decomposition temperature of said second compound to convert the precious metal compound to metal and other compound to refractory metal oxide whereby the precious metal is bonded to the ceramic surface by refractory metal oxide.

4,341,663

PROCESS FOR THE PRODUCTION OF SPHERICAL SHAPED BODIES BASED ON Al_2O_3 AND OPTIONALLY SiO_2

Helmut Derleth; Karl-Heinz Bretz, and Günther Saüer, all of Nienburg, Fed. Rep. of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Aug. 29, 1980, Ser. No. 182,708

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2935914

Int. Cl.³ B01J *21/04*

U.S. Cl. 252—463 21 Claims

1. A process for the preparation of shaped bodies comprising:

(a) preparing a plastic mixture by mixing a predominantly dry component (K1) in powder form of a material selected from the group consisting of aluminum oxides, aluminum hydroxides, and mixtures thereof and a paste component (K2) comprising water in the form of a material selected from the group consisting of gels and sols of aluminum oxides, aluminum hydroxides and mixtures thereof;

(b) continuously extruding said plastic mixture into extrudates;

(c) continuously cutting said extrudates into cut lengths;

(d) shaping said cut lengths into spherical shaped bodies and

(e) drying said spherical shaped bodies.

4,341,664

HYDROCARBON DEHYDROGENATION WITH AN ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE FOR USE THEREIN

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 48,957, Jun. 15, 1979, Pat. No. 4,229,319, which is a division of Ser. No. 954,684, Oct. 25, 1978, Pat. No. 4,206,040, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Oct. 20, 1980, Ser. No. 198,732

The portion of the term of this patent subsequent to Jun. 12, 1996, has been disclaimed.

Int. Cl.³ B01J *23/64*

U.S. Cl. 252—466 PT 12 Claims

1. A nonacidic catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material, a uniform dispersion of catalytically effective amounts of a silver component, an alkali or alkaline earth component and a platinum group component which is maintained in the elemental metallic state.

4,341,665

ACYLNORBORNANONE ACETALS, PROCESS FOR PREPARING THE SAME, AND PERFUME COMPOSITIONS CONTAINING THE SAME

Yoshiharu Inoue, Ohsaka; Fumio Tanimoto, Kyoto, and Hisao Kitano, Ohsaka, all of Japan, assignors to Nippon Petrochemicals Co., Ltd., Japan

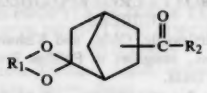
Filed Mar. 5, 1981, Ser. No. 240,953

Claims priority, application Japan, Mar. 7, 1980, 55-29693; Mar. 7, 1980, 55-29694; Jun. 18, 1980, 55-82593

Int. Cl.³ C11B *9/00;* C07D *319/04, 317/72*

U.S. Cl. 252—522 R 14 Claims

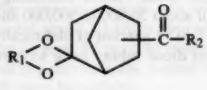
1. An acylnorbornanone acetal represented by the following formula (I):



(I)

(wherein R_1 is a saturated hydrocarbon group having 2 to 7 carbon atoms and R_2 is a hydrogen atom or a hydrocarbon group having 1 to 10 carbon atoms).

8. A perfume composition characterized by containing a fragrance-effective amount of an acylnorbornanone acetal represented by formula (I):



(I)

(wherein R_1 is a saturated hydrocarbon group having 2 to 7 carbon atoms and R_2 is a hydrogen atom or a hydrocarbon group having 1 to 10 carbon atoms) and a suitable perfume adjuvant.

4,341,666

PERFUMING WITH OXYGEN CONTAINING DERIVATIVES OF TRICYCLO[6.2.1.$0^{2,7}$]UNDECANE

Werner Skorianetz, Dardagny, and Günther Ohloff, Bernex, both of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

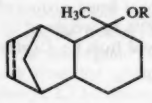
Division of Ser. No. 54,028, Jul. 2, 1979, Pat. No. 4,311,852. This application Mar. 30, 1981, Ser. No. 249,118

Claims priority, application Switzerland, Jul. 5, 1978, 7320/78

Int. Cl.³ A61K *7/46*

U.S. Cl. 252—522 R **2 Claims**

1. A method for modifying, improving or enhancing the organoleptic properties of perfumes or perfumed articles which comprises adding thereto an olfactive effective amount of a compound having the formula:



wherein the dotted line represents a single or a double bond and the symbol R represents either a hydrogen atom or a saturated or unsaturated acyl radical containing from 1 to 6 carbon atoms.

4,341,667

COMPOSITION AND METHOD OF IMPROVING THE UNVULCANIZED PROPERTIES OF BLENDS CONTAINING RECLAIMED RUBBER

Joginder Lal, Akron, and Sandra J. Walters, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 42,275, May 24, 1979, Pat. No. 4,243,561, which is a division of Ser. No. 779,382, Mar. 21, 1977, Pat. No. 4,198,324. This application Jun. 23, 1980, Ser. No. 161,830

Int. Cl.³ B29H *19/00;* **C08L** *17/00*

U.S. Cl. 525—211 **12 Claims**

1. A reclaimed rubber-polyolefin composition, comprising:

from about 20 parts by weight to about 60 parts by weight of a crystalline or semi-crystalline polyolefin, said polyolefin selected from the group consisting of polyethylene, polypropylene, copolymers of ethylene with about 1 percent to about 20 percent by weight of an alpha-olefin having from 3 to 10 carbon atoms, copolymers of propylene with about 1 percent to about 20 percent by weight of ethylene or alpha-olefins having from 4 to 10 carbon atoms, a copolymer of ethylene with from about 1 percent to about 15 percent by weight of vinyl acetate, and combinations thereof:

from about 40 parts by weight to about 80 parts by weight of reclaimed rubber, said reclaimed rubber made from vulcanized rubber which has been devulcanized by microwave energy, the total amount of said polyolefin and said reclaimed rubber being 100 parts by weight, said reclaimed rubber selected from the group consisting of polychloroprene, chlorobutyl rubber, bromobutyl rubber, nitrile rubber, nitrile rubber-poly(vinyl chloride) blends having up to 30 percent by weight of poly(vinyl chloride), butyl rubber, EPDM, natural or synthetic cis-1,4-polyisoprene, polyalkenylenes, elastomers made from monomers selected from the group consisting of conjugated dienes having from 4 to 10 carbon atoms, interpolymers of said dienes (1) among themselves, or (2) with monomers selected from the group consisting of vinyl substituted hydrocarbon compounds having from 8 to 12 carbon atoms; and combinations thereof.

4,341,668

AQUEOUS COMPOSITION CONTAINING ALDEHYDE CONDENSATE AND USE THEREOF

Jeffrey E. Martin, Columbus; Albert F. Vozella, Worthington; Golden F. Watts, Delaware, and Edwin R. Luckman, Columbus, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Sep. 16, 1980, Ser. No. 187,692

Int. Cl.³ C08L *89/02, 61/06*

U.S. Cl. 524—297 **41 Claims**

1. A composition comprising a compound capable of providing reactive methylene sites at elevated temperature of about 135° C. and above; a hydrophobic component containing an organic hydrophobic diluent and an isocyanate; and an aqueous component containing a water soluble phenolic-aldehyde condensate having free methylol groups and a pH of at least about 8 and being obtained from about 0.75 to about 3.3 moles of aldehyde per mole of phenolic compound.

4,341,669

CELLULOSE DERIVATIVE/POLYETHER POLYAMINE/POLYEPOXIDE REACTION PRODUCT AS ANTISTATIC SOIL RELEASE FINISH FOR POLYESTER

Francis W. Marco, Pauline, and Clarence O. Stokes, Jr., Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 2, 1978, Ser. No. 947,751

Int. Cl.³ C08L *1/32;* **B05D** *3/02;* **B32B** *27/34, 27/36*

U.S. Cl. 523—205 **7 Claims**

1. A textile product including polyester fibers impregnated with the reaction product of

a cellulose derivative chosen from the group consisting of: cellulose ethers and cellulose esters having a degree of substitution of between about 0.5 and about 2.6 and being present in an amount of at least about 0.01% of the weight of the polyester fibers;

a polyether polyamine in an amount of at least about 0.05% by weight of the polyester fibers; and,

a polyepoxide in an amount at least sufficient to cross link the polyether polyamine and the cellulose derivative.

4,341,670

POLYAMIDE FROM DIAMINE, TRIAMINE AND POLYCARBOXYLIC ACID MIXTURE

Adriën G. Hinze, Dordrecht; Robert P. Roggeveen, and Abraham J. Meulenberg, both of Gouda, all of Netherlands, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Apr. 17, 1980, Ser. No. 141,235

Claims priority, application Netherlands, Apr. 17, 1979, 7902972; United Kingdom, Dec. 28, 1979, 7944527

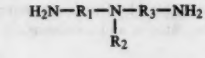
Int. Cl.³ C08L *91/00*; C08G *69/26*

U.S. Cl. 528—338 5 Claims

1. A solid polyamide having an acid value less than 10 and amine value from 75 to 150 consisting essentially of repeating groups obtained from:

(a) an aliphatic diamine having 2 or 3 carbon atoms between the nitrogen atoms;

(b) a triamine having the formula



in which R_1, R_2 and R_3 are saturated hydrocarbon radicals containing from 1 to 6 carbon atoms;

(c) an aliphatic dicarboxylic acid having from 6 to 19 carbon atoms; and

(d) a polymeric fatty acid obtained by the polymerization of a C_{18} unsaturated fatty acid and containing at least 75% by weight C_{36} dimer acid; the molar ratio of (a) to (b) ranging from 0.4:1 to 1.5:1 and the polymeric fatty acid being present in an amount from 3 to 25 mol percent of the total dicarboxylic acids.

4,341,671

POLYESTER AMIDE MELT ADHESIVES

Manfred Bolze, Bergkamen-Oberaden, and Manfred Drawert, Froendenberg-Strickherdicke, both of Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 197,787

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1979, 2942680

Int. Cl.³ C08G *69/14*

U.S. Cl. 528—324 7 Claims

1. A polyesteramide melt adhesive having a slow solidification rate, which melt adhesive is the polymeric reaction product of

(A) a dimerized fatty acid having 16–44 carbon atoms,

(B) a member selected from the group consisting of caprolactam and 6-aminocaproic acid, wherein 0.25–5.0 mol of component (B) is employed per mol of carboxyl groups present in component (A),

(C) a monoalkanolamine of the formula

$$HO\text{-}R\text{-}NH_2,$$

wherein R is a member selected from the group consisting of linear and branched aliphatic hydrocarbon having 2 to 8 carbon atoms and such aliphatic hydrocarbon interrupted by at least one oxygen atom, and

(D) a member selected from the group consisting of diprimary, disecondary, and primary-secondary diamines, wherein the equivalence ratio of (C):(D) is between 0.1:0.9 and 0.9:0.1.

4,341,672

SULFUR OR PEROXY CURED EPOXIDIZED DIENE RUBBERS

Henry L. Hsieh, Bartlesville, Okla., and Kishore Udipi, East Longmeadow, Mass., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 862,066, Dec. 19, 1977, abandoned, which is a continuation of Ser. No. 661,082, Feb. 25, 1976, abandoned. This application Sep. 19, 1980, Ser. No. 188,659

Int. Cl.³ C08L *15/00*

U.S. Cl. 523—451 25 Claims

1. A curable rubbery tread composition, exhibiting wet skid resistance when cured, consisting of rubber, filler, extender oil, and a sulfur or peroxy curing system, wherein said rubber is an epoxidized conjugated diene rubber exhibiting a molecular weight in the range of about 50,000 to 500,000 and an extent of epoxidation of about 5 to 95 percent of olefinically unsaturated sites in the conjugated diene rubber prior to curing.

4,341,673

METHACRYLATE POLYMER CONCRETE MIX WITH REDUCED SHRINKAGE DURING CURE COMPRISING (A) PARAFFINIC OIL AND (B) C_2-C_4 ALKYL METHACRYLATE

Thomas J. Hyde, Wilmington, Del., assignor to E. I Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 15, 1981, Ser. No. 273,632

Int. Cl.³ C08K *5/01*; C08L *13/04*

U.S. Cl. 524—272 5 Claims

1. An improved methacrylate liquid mixture for use in making a methacrylic polymer concrete, wherein the improvement comprises including in the methacrylate liquid mixture:

(a) 5–12% by weight of liquid mixture of a paraffinic oil which contains at least 60% by weight of saturated aliphatic hydrocarbons and has a boiling point above 200° C.,

(b) 4–10% by weight of liquid mixture of an acrylic polymer wherein at least 90% by weight of the units of the acrylic polymer are derived from C_2–C_4 alkyl methacrylate.

4,341,674

COMPOSITION FOR IMPREGNATING GLASS FIBER CORDS FOR REINFORCING ELASTOMERIC PRODUCTS

Donn R. Vermilion, and Donald J. Hammond, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 1, 1980, Ser. No. 211,596

Int. Cl.³ C08L *91/08*

U.S. Cl. 524—156 10 Claims

1. In an aqueous composition for impregnating multifilament glass strand with an elastomer-compatible impregnant, said aqueous composition comprising emulsified polybutadiene homopolymer, emulsified butadiene-styrene-vinylpyridine terpolymer, resorcinol-formaldehyde resin, emulsified wax, a thickening agent and a defoaming agent, the improvement for reducing rub-off of said impregnant from said strand impregnated therewith, while retaining desirably low tackiness of said impregnant, which comprises employing synthetic anionic surfactant having sulfate, sulfonate or sulfosuccinate groups as emulsifying agent for said homopolymer and for said terpolymer.

4,341,675

RUBBER COMPOSITIONS CONTAINING ETHYLENE-PROPYLENE-DIENE TERPOLYMERS OR ETHYLENE-PROPYLENE COPOLYMERS AND SILICONES

Akito Nakamura, Ichihara, Japan, assignor to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Mar. 30, 1981, Ser. No. 248,161
Claims priority, application Japan, Apr. 8, 1980, 55-46072
Int. Cl.³ C08J 3/00
U.S. Cl. 524—266 14 Claims

1. A rubber composition comprising

(A) 95 to 5 parts by weight of unvulcanized ethylenepropylene-diene terpolymer or ethylene-propylene copolymer,

(B) 5 to 95 parts by weight of a polydiorganosiloxane gum in which the organic radicals are selected from methyl, vinyl, phenyl, and 3,3,3-trifluoropropyl, said organic radicals being at least 50 percent methyl based on the total number of organic radicals, a combination of (A) and (B) being 100 parts by weight,

(C) 1 to 30 parts by weight of a polyorganosiloxane based on 100 parts by weight of combined (A) and (B), said polyorganosiloxane having an average unit formula

$$R_aR'_bSiO_{\frac{4-a-b}{2}}$$

in which R represents a monovalent radical selected from the group consisting of vinyl, alkyl radicals of 1 to 3 carbon atoms, halogenated alkyl radicals of 1 to 3 carbon atoms, aryl radicals, halogenated aryl radicals, and alkyl radicals of 1 to 3 carbon atoms substituted with an aryl radical, R′ represents a monovalent radical selected from the group consisting of aliphatic hydrocarbon radicals having from 4 to 20 carbon atoms and their derivatives in which at least one hydrogen atom is substituted with a chlorine atom or a phenyl radical, a has a value of from 1 to 2.5, b has a value of from 0.01 to 1.2, and the sum of a plus b has a value of from 1.8 to 3,

(D) 1 to 30 parts by weight based on 100 parts by weight of combined (A) and (B), of a polymer selected from polyoxyalkylene-organosiloxane copolymers or poly(hydroxyalkyl)organosiloxanes, in which the oxyalkylene contains 2 or 3 carbon atoms, the hydroxyalkyl radicals contain 1 to 8 carbon atoms, the organic radicals are monovalent radicals selected from the group consisting of vinyl, phenyl, phenylethyl, 3,3,3-trifluoropropyl, and alkyl radicals containing 1 to 8 carbon atoms, and at least 50 percent of the organic radicals are alkyl radicals, and

(E) 0.1 to 15 parts by weight based on 100 parts by weight of combined (A) and (B), of an organic peroxide.

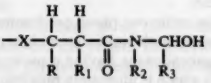
4,341,676

SELF-CURABLE RESINOUS COMPOSITIONS CONTAINING N-METHYLOL AMIDE GROUPS USEFUL IN COATING APPLICATIONS

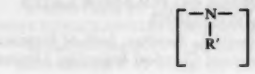
Steven E. Patricca, Pittsburgh, and Stephen L. Buchwalter, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 4, 1980, Ser. No. 175,163
Int. Cl.³ C08L 63/02
U.S. Cl. 523—417 26 Claims

1. An aqueous resinous composition comprising a polymer characterized by a pendant group which is of the structure:



wherein X represents sulfur or an amino group



of which R′ is hydrogen or an alkyl group containing from about 1 to 6 carbon atoms; and wherein R, R_1, R_2 and R_3, each independently, is hydrogen or an alkyl group containing from about 1 to 6 carbon atoms; said composition also comprises a water-solubilizing group.

4,341,677

ANTIOXIDANTS AND REINFORCED POLYMERS AND OIL-IN-WATER EMULSIONS OF ANTIOXIDANTS

Albert E. Tamosauskas, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 137,063, Apr. 3, 1980. This application Sep. 24, 1980, Ser. No. 190,153
Int. Cl.³ C08L 63/02
U.S. Cl. 523—421 20 Claims

1. An aqueous sizing composition for treating glass fibers to provide additional protection against degradation of polymer reinforced with the treated glass fibers, comprising:

(a) about 0.5 to about 15 weight percent of an oil-in-water emulsion of an antioxidant having low volatility and good thermal resistance, organic solvent having a boiling point above the temperature of processing glass fibers but low enough to enable the solvent to be vaporized at the temperature of drying glass fibers and having a kauri-butanol value in the range of about 10 to about 50 for the antioxidant that is substantially aliphatic and about 50 to about 100 for the antioxidant that is substantially aromatic and an emulsifier blend of at least two emulsifiers selected from the group of anionic, cationic, and nonionic having an HLB in the range of about 12 to about 27,

(b) a film-former in an amount in the range of about 0.5 to about 15 weight percent,

(c) a coupling agent in an amount of about 0.5 to about 10 weight percent, and

(d) water in an amount to give a total amount of water in the aqueous sizing composition in the range of about 70 to about 99 weight percent.

4,341,678

WATER-BORNE EPOXY-PHENOLIC COATING COMPOSITIONS

Nick Georgalas, Brooklyn, N.Y., and William P. Keaveney, Pompton Plains, N.J., assignors to Inmont Corporation, Clifton, N.J.

Continuation of Ser. No. 75,765, Sep. 17, 1979, abandoned. This application Jan. 9, 1981, Ser. No. 223,861
Int. Cl.³ C08L 63/02
U.S. Cl. 523—414 6 Claims

1. An aqueous container coating composition consisting of a blend of

(a) from about 60 to 85% by weight of a water-miscible amine solubilized epoxy resin, and

(b) from about 15 to 40% by weight of a water soluble monomeric phenolic compound.

4,341,679

VINYLIDENE CHLORIDE CO-POLYMER LATEX COMPOSITIONS

Anthony J. Burgess, and David L. Gardner, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 12, 1977, Ser. No. 860,312

Claims priority, application United Kingdom, Dec. 20, 1976, 53021/76

Int. Cl.[3] C08L *27/16*

U.S. Cl. 524—833 12 Claims

1. An aqueous latex of a copolymer capable of forming stable films which have excellent protective properties on metallic substrates, said films having good chemical resistance and low permeability to water vapour, said copolymer consisting essentially of (i) vinylidene chloride, (ii) vinyl chloride, (iii) one or more alkyl acrylates having from 1 to 12 carbon atoms in the alkyl group and/or one or more alkyl methacrylates having from 2 to 12 carbon atoms in the alkyl group and (iv) one or more aliphatic alpha-beta-unsaturated carboxylic acids, the proportion of vinylidene chloride being from 65 to 90 parts by weight, the proportion of the said alkyl acrylates and/or methacrylates being from 2 to 15 parts by weight and the proportion of the said carboxylic acids being from 0.2 to 8 parts by weight, per hundred parts by weight of the total vinylidene chloride and vinyl chloride.

4,341,680

WATER-SOLUBLE, PRESSURE SENSITIVE, SELF-ADHESIVE, COMPOSITION, METHOD OF MANUFACTURE THEREOF, AND TAPES PRODUCED THEREWITH

Rüdiger Hauber, and Günter Guse, both of Hamburg, Fed. Rep. of Germany, assignors to Beiersdorf Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 4, 1980, Ser. No. 118,130

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1979, 2904233

Int. Cl.[3] C08L *31/00*

U.S. Cl. 525—329 14 Claims

1. A water-soluble, pressure sensitive, self-adhesive composition comprising a mixture of

(a) a copolymer comprising 70 to 80 parts by weight of monomeric ethyl acrylate and 30 to 20 parts by weight of a monomeric, α,β unsaturated aliphatic monocarboxylic acid and

(b) a tertiary, ethoxylated N-alkyl alkane diamine having 3 to 18 ethylene oxide units per molecule, said alkyl having 10 to 18 carbon atoms,

from 50% to 90% of the acid groups of said acid being neutralized.

4,341,681

MANNICH BASE COPOLYMERS

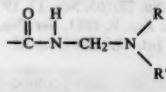
Kazys Sekmakas, Palatine; Raj Shah, Schaumburg, and Aurelio J. Parenti, Norridge, all of Ill., assignors to De Soto, Inc., Des Plaines, Ill.

Filed May 18, 1981, Ser. No. 264,943

Int. Cl.[3] C08K *5/20*

U.S. Cl. 524—555 11 Claims

1. A cationic solution addition copolymer of monoethylenically unsaturated copolymerizable monomers, said copolymer having side chains of the following structure:



where R and R′ are selected from C_1–C_8 alkyl and C_1–C_8 alkanol, or are together constituted by a C_2–C_8 alkylene group, at least a portion of the tertiary amine groups in said structure being reacted with a solubilizing acid to form a salt which enables the copolymer to be dissolved in water, said copolymer being reacted with a diepoxide in a stoichiometrec deficiency with respect said amine groups.

4,341,682

COMPOSITION COMPRISING ESTER OF EPOXY, CARBONYL CONTAINING POLYBUTADIENE POLYMER AND ACID CONTAINING ADDITION POLYMER, AND AQUEOUS COATING COMPOSITIONS PREPARED THEREFROM

Michael A. Tobias, Bridgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 23, 1980, Ser. No. 219,470

Int. Cl.[3] C08L *13/00*

U.S. Cl. 523—409 7 Claims

1. A composition comprising a stable aqueous emulsion of an adduct neutralized with sufficient base to render it emulsifiable in water, in which said adduct contains carboxyl groups, is substantially free of oxirane groups, and comprises the esterification reaction product of

(a) an acidic copolymer comprising a solution copolymer of monoethylenically unsaturated monomers containing at least 10 weight percent of monoethylenically unsaturated carboxylic acid monomer based on the total weight of the monomers; and

(b) a partially defunctionalized epoxy resin containing free epoxide groups, which is the reaction product of polyepoxide and a carboxyl containing polybutadiene polymer.

4,341,683

PRINTING INK FORMULATIONS

James A. Snelgrove, Monson, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 157,998, Jun. 9, 1980, Pat. No. 4,303,718. This application May 4, 1981, Ser. No. 260,437

Int. Cl.[3] C08K *5/34*

U.S. Cl. 524—503 5 Claims

1. A printing ink formulation having an ink base comprising a dye and a solvent medium which further comprises a polyvinyl formal with a weight average molecular weight of from about 8,000 to 200,000 in an amount sufficient to raise the viscosity of the ink formulation to a level dictated by the printing process in which the formulation is to be used.

5. A printing ink formulation according to claim 1 having a Shell #3 cup viscosity of from 15 to 50 seconds comprising from 3 to 10 percent by weight of the ink base of a polyvinyl formal having a weight average molecular weight of from 15,000 to 40,000 and an acetate content of from 8 to 35 percent by weight, measured as vinyl acetate, and a hydroxyl content of from 2 to 10 percent by weight measured as vinyl alcohol.

4,341,684

COMPOSITIONS AND METHOD FOR IMPROVING THE PROPERTIES OF LIQUID MEDIA

Karl W. Krantz, Schenectady, N.Y., assignor to General Electric Company, New York, N.Y.

Division of Ser. No. 584,417, Jun. 6, 1975, Pat. No. 4,190,069. This application Nov. 7, 1979, Ser. No. 91,989

Int. Cl.[3] C08K *5/01, 5/04;* F17D *1/16, 1/17*

U.S. Cl. 523—175 10 Claims

1. A composition for reducing the fluid flow friction loss in the transmission of a hydrocarbon fluid through a pipeline, said composition being an oil-in-oil emulsion comprising:

(i) a continuous phase of a liquid which is different from, but normally miscible with said hydrocarbon fluid, and, dispersed therein,

(iii) a stable discontinuous phase predominantly comprising fine particles of a high molecular weight polyhydrocarbon or polydiorganosiloxane having a molecular weight of at least 500,000 which is ultimately miscible with said hydrocarbon fluid,

(iii) a surface active agent which is preferentially compatible

with continuous phase(i) so as to favor the maintenance of (i) as the continuous phase.

4,341,685

PROCESS FOR PREPARING ORGANIC DISPERSION OF ACID TYPE FLUORINATED POLYMER

Haruhisa Miyake; Yoshio Sugaya, and Tatsuro Asawa, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Nov. 3, 1980, Ser. No. 203,391

Claims priority, application Japan, Nov. 20, 1979, 54/149479; Dec. 7, 1979, 54/157989

Int. Cl.³ C08K *5/02*

U.S. Cl. 524—104 **11 Claims**

1. A process for preparing a dispersion of a fluorinated copolymer containing acid groups or groups convertible to acid groups in an organic solvent, consisting essentially of:

copolymerizing a fluorinated ethylenically unsaturated monomer and a monomer containing an acid group or group convertible into an acid group in an aqueous medium containing a polymerization initiator thereby obtaining an aqueous dispersion of a fluorinated copolymer having an acid group or a group convertible to an acid group content of 5 to 40 mole %; and

substituting the aqueous medium of said dispersion with a hydrophilic organic solvent while maintaining the dispersion of said copolymer, whereby a concentration of copolymer exceeding 5% by wt in said dispersion is obtained.

4,341,686

ADHESIVE PRODUCTS AND A PROCESS FOR THEIR USE IN POLYURETHANES

Sarbananda Chakrabarti, Ludwigshafen; John Hutchison, Wachenheim, and Otto Volkert, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 29, 1981, Ser. No. 287,878

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1980, 3029583

Int. Cl.³ C08K *3/28*

U.S. Cl. 427—244 **12 Claims**

1. An adhesive product comprising, based on the total weight,

(a) 1 to 10 percent by weight of an aminoalkyltrialkoxysilane,

(b) 1 to 20 percent by weight of a fine particle size polyvinylchloride powder, and/or

(c) 0.1 to 5 percent by weight of an amorphous hydrophobic silicic acid, and

(d) 98 to 65 percent by weight of at least one organic solvent.

4,341,687

PEELABLE FILM-FORMING URETHANE/ISOCYANATE PAINTS

Kenichi Ozeki, Ichinomiya; Toyoji Wada, Nagoya; Kunio Ito, Aichi; Tetsuo Tomimori, Nagaokakyo; Isao Takagi, and Mitsunobu Nekado, both of Kobe, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 19, 1980, Ser. No. 188,664

Claims priority, application Japan, Sep. 25, 1979, 54-122895; Sep. 26, 1979, 54-124500

Int. Cl.³ C08L *75/04*

U.S. Cl. 524—500 **8 Claims**

1. A peelable film-forming paint, comprising a mixture of a polyurethane resin, an isocyanate prepolymer and 15% by weight of ethylene glycol monoalkyl ether based on the total weight of said polyurethane resin and said isocyanate prepolymer.

4,341,688

POLY(ESTER-AMIDE) CAPABLE OF FORMING AN ANISOTROPIC MELT PHASE DERIVED FROM DIHYDROXYANTHRAQUINONE, HYDROXYBENZOIC ACID, DICARBOXYLIC ACID, AND AROMATIC MONOMER CAPABLE OF FORMING AN AMIDE LINKAGE

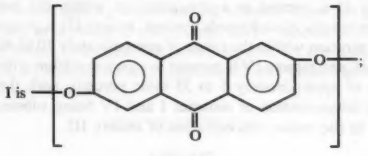
Larry F. Charbonneau, Chatham; Gordon W. Calundann, N. Plainfield, and Anthony J. East, Madison, all of N.J., assignors to Celanese Corporation, New York, N.Y.

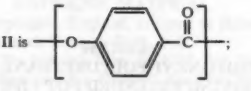
Filed Apr. 7, 1981, Ser. No. 251,818

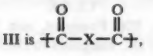
Int. Cl.³ C08G *69/44*

U.S. Cl. 524—592 **33 Claims**

1. A melt processable poly(ester-amide) capable of forming an anisotropic melt phase at a temperature below approximately 400° C. consisting essentially of recurring moieties I, II, III, and IV wherein:

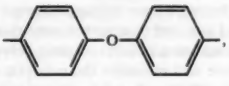
I is  ;

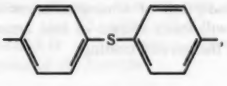
II is  ;

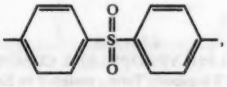
III is  ,

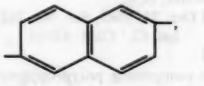
where X is selected from at least one member of the group consisting of

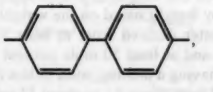
(a) 1,3-phenylene radicals which optionally are replaced with up to 75 mole percent of 1,4-phenylene radicals based upon the total concentration of 1,3-phenylene and 1,4-phenylene radicals present in moiety III,

(b)  ,

(c)  ,

(d)  ,

(e)  ,

(f)  ,

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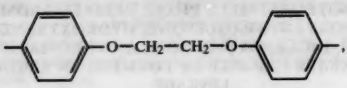


(g)

(h) a divalent aliphatic carbocyclic radical, and

(i) mixtures of the foregoing; and

IV is -(Y-Ar-Z-)-, where Ar is a divalent radical comprising at least one aromatic ring, Y is O, NH, or NR, and Z is NH or NR, where R is an alkyl group of 1 to 6 carbon atoms or an aryl group,

wherein at least some of the hydrogen atoms present upon the rings optionally may be replaced by substitution selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, phenyl, and mixtures thereof, and wherein moiety I is present in a concentration within the range of approximately 5 to 35 mole percent, moiety II is present in a concentration within the range of approximately 20 to 80 mole percent, moiety III is present in a concentration within the range of approximately 10 to 40 mole percent, and moiety IV is present in a concentration within the range of approximately 5 to 35 mole percent, with the total molar concentration of moieties I and IV being substantially equal to the molar concentration of moiety III.

4,341,689

TWO COMPONENT POLYURETHANE COATING SYSTEM HAVING EXTENDED POT LIFE AND RAPID CURE

Jyotindra K. Doshi, Mt. Prospect, and Scott A. Wallenberg, Villa Park, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Jul. 2, 1981, Ser. No. 279,821
Int. Cl.³ C08G *18/18*
U.S. Cl. 523—211 **15 Claims**

1. A two component polyurethane coating system comprising a first component which is a solution of a soluble resin containing active hydrogen atoms capable of reacting with isocyanate functionality, said resin being dissolved in inert organic solvent, said first component having dispersed therein an amine catalyst for said reaction with isocyanate absorbed in a molecular sieve having a pore size large enough to absorb the amine catalyst, and a second component comprising an organic polyisocyanate in solution in inert organic solvent, whereby said molecular sieve will minimize the catalytic effect of said amine catalyst when the two components are mixed until after coating when absorption of atmospheric moisture by said molecular sieve will force release of said amine catalyst to speed the cure of the applied coating.

4,341,690

STABILIZED POLYPROPYLENE COMPOSITION

Harold P. Marsh, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,403
Int. Cl.³ C08L *67/00*
U.S. Cl. 524—451 **6 Claims**

1. Composition comprising polypropylene, about 10–60% by weight based on the weight of polypropylene, of talc, and about 0.5–3.0% by weight based on the weight of polypropylene of a copolyester derived from at least 50 mole percent terephthalic acid and at least 50 mole percent 1,6-hexanediol, said copolyester having a melting point of less than 150° C. and a heat of fusion of from about 0.1 to about 12 calories per gram.

4,341,691

LOW VISCOSITY BONE CEMENT

David A. Anuta, Winona Lake, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Filed Feb. 20, 1980, Ser. No. 122,896
Int. Cl.³ C08F *265/06*; C08J *3/20*; C08K *7/04*
U.S. Cl. 523—116 **21 Claims**

1. An acrylic bone cement composition comprising: a liquid monomer component and a polymer powder component in the form of beads wherein the liquid component to powder component ratio is 1 to 2 (volume weight) there the liquid component is measured in milliliters and the powder component is measured in grams and wherein said liquid monomer component is comprised of methylmethacrylate monomer and said polymer powder component is comprised at least 80% by weight of polymethylmethacrylate polymer powder in which at least 85–95% by weight of the polymethylmethacrylate polymer powder beads are regular beads which fall through a #40 mesh (425 micron openings) screen and a #100 mesh screen (150 micron openings) and which have a maximum average size of about 25 microns and a minimum average size of about 13 microns, and about 5–15% by weight of polymethylmethacrylate polymer powder beads which fall through a #40 mesh (425 micron openings) screen, but not through a #100 mesh screen, (150 micron openings) and are subsequently milled to roughen and break up the surface of the bead, and whereby when the liquid monomer component is mixed with said polymer powder component, the resulting cement has a viscosity of less than 1500 poise at approximately 20 degrees C. (68 degrees F.) for at least six minutes after the components are initially mixed, and such that the resulting bone cement becomes completely hard in not more than ten to eleven minutes from the time the components were initially mixed.

4,341,692

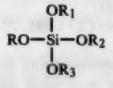
DIHALONEOPENTYL SILICATE FLAME RETARDANTS IN PLASTIC FORMULATIONS

Alfred K. Jung, Ridgewood; Michael Turczyk, Yonkers, and Edward D. Weil, Hasting-on-Hudson, all of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 50,246, Jun. 20, 1979, Pat. No. 4,252,967.
This application Oct. 8, 1980, Ser. No. 195,034
Int. Cl.³ C08K *3/34, 5/54*
U.S. Cl. 524—263 **9 Claims**

1. A plastic formulation containing a flame retardant effective amount of solid dibromoneopentyl silicate wherein said silicate is prepared by the process of contacting in a reaction medium;

(1) dihaloneopentyl glycol selected from the group consisting of dibromoneopentyl glycol and monobromomonochloroneopentyl glycol with, (2) silicate ester represented by the formula:



wherein R_1, R_2, R_3, and R_4 are independently selected from hydrocarbyl radicals; said contact being at a temperature and for a time effective to transesterify the silicate ester.

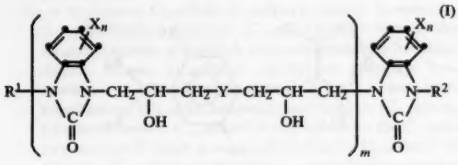
4,341,693

OLIGOMERIC EPOXIDE RESINS AND THEIR USE AS FLAMEPROOFING AGENTS

Lothar Buxbaum, Villach, Austria, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

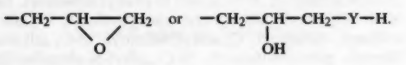
Filed Jun. 15, 1981, Ser. No. 273,799
Claims priority, application Switzerland, Jun. 26, 1980, 4914/80
Int. Cl.³ C08G 59/26, 5/34
U.S. Cl. 524—93 10 Claims

1. A halogen-containing, essentially linear oligomeric epoxide resin of the formula I



(I)

in which n is the number 2, 3 or 4, m has a numerical value from 1 to 30, X is chlorine or bromine, Y is the divalent radical of a H-acid compound from the group comprising diols, dihydric phenols, bisphenols, dicarboxylic acids and cyclic ureides and R^1 and R^2 are H atoms,



4,341,694

INTUMESCENT FLAME RETARDANT COMPOSITIONS

Yuval Halpern, Skokie, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jul. 6, 1981, Ser. No. 280,569
Int. Cl.³ C08K 5/00
U.S. Cl. 252—606 2 Claims

1. An intumescent composition comprising a resin selected from the group consisting of polyolefins, polyvinylaromatic resins, polycarbonate resins, polyacrylate resins, polyamides, polyvinyl chloride and blends thereof, 2,6,7-trioxa-1-phosphobicyclo [2.2.2.]octane-4-methanol-1-oxide and a nitrogen compound selected from the group consisting of melamine, ammeline, benzoguanidine, urea, guanidine and salts thereof.

4,341,695

RUBBER MODIFIED TERPOLYMERS WITH IMPROVED HEAT DISTORTION RESISTANCE

Yoon C. Lee, and Quirino A. Trementozzi, both of Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 865,049, Dec. 27, 1977, Pat. No. 4,197,376. This application Jul. 24, 1978, Ser. No. 927,429
Int. Cl.³ C08K 5/13; C08L 37/00
U.S. Cl. 524—342 9 Claims

9. A polymeric composition produced by polymerizing, in the presence of a polybutadiene rubber having at least 90% cis 1,4-butadiene units, a monomer composition consisting of styrene, maleic anhydride and methyl methacrylate to produce a composition comprising from 2 to 30% of the polybutadiene rubber, (ungrafted basis), grafted with a superstrate polymer and dispersed in a matrix polymer, said superstrate and matrix polymers each comprising from 60 to 75% of styrene, 20 to 30% of maleic anhydride and 4 to 10% of methyl methacrylate, and incorporating in said composition up to 2% of 1,3,5-trimethyl-2,4,6-tris(3,5-di-tert-butyl-4-hydroxybenzyl) benzene; all percentages being by weight.

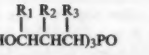
4,341,696

TRIS-(3-HYDROXYALKYL) PHOSPHINE OXIDE FLAME RETARDANT COMPOSITIONS

Diza P. Braksmayer, and Syed N. Hussain, both of Plainsboro, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jan. 28, 1980, Ser. No. 116,334
Int. Cl.³ C08K 5/53
U.S. Cl. 524—139 22 Claims

1. A glass filled thermoplastic polyamide polymer rendered flame retardant by having combined therewith an effective amount of a tris-(3-hydroxyalkyl) phosphine oxide having the formula:



wherein R_1 and R_3 are any radical selected from the group consisting of hydrogen, phenyl and alkyl radicals of 1 to 4 carbon atoms and R_2 is any radical selected from the group consisting of hydrogen, phenyl and alkyl radicals of 2 to 4 carbon atoms, provided that when R_1 and R_3 are hydrogen radicals, R_2 is either an alkyl radical of 2 to 4 carbon atoms or a phenyl radical.

4,341,697

ANTIGENIC MATERIAL

David Snary, Orpington, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 134,262, Mar. 26, 1980, Pat. No. 4,298,596. This application May 18, 1981, Ser. No. 264,637
Claims priority, application United Kingdom, Mar. 29, 1979, 7911049
Int. Cl.³ C07G 7/00
U.S. Cl. 260—112 R 8 Claims

1. An antigen obtained from *T. cruzi* organisms comprising glycoprotein of molecular weight from about 6×10^4 to about 9.5×10^4, said glycoprotein being substantially insoluble in water and being capable of interacting with lectins which have an affinity for glucose, mannose or galactose, said antigen being substantially free from non-proteinaceous matter.

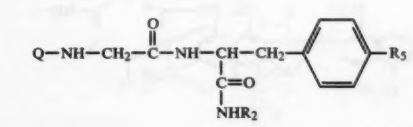
4,341,698

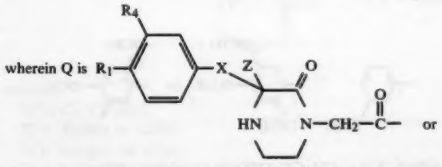
ENKAPHALIN DERIVATIVES

Albert A. Carr; Robert A. Farr, and John M. Kane, all of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Continuation-in-part of Ser. No. 50,950, Jun. 21, 1979, abandoned. This application Mar. 14, 1980, Ser. No. 130,431
Int. Cl.³ C07C 103/52
U.S. Cl. 260—112.5 R 25 Claims

1. A compound of the formula





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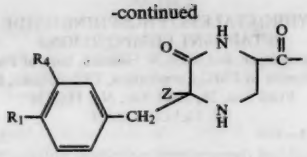
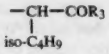
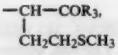


in which R_1 is hydrogen, hydroxy or halogen and R_4 is hydrogen or, R_1 and R_4 are both hydroxy; Z is hydrogen or straight chain lower alkyl having from 1 to 4 carbon atoms and X is methylene, carbonyl, hydroxymethylene, thio, sulfinyl or sulfonyl, or Z and X, taken together, are methylidenyl, with the proviso that when X is sulfonyl or sulfinyl, Z is other than hydrogen; R_5 is hydrogen or halogen, and R_2 is H, a straight or branched lower alkyl group having from 1 to 4 carbon atoms, the group



or the group



wherein R_3 is hydroxy, amino, alkylamino or dialkylamino wherein the alkyl moiety is straight or branched and has from 1 to 4 carbon atoms, diastereomers, enantiomers and pharmaceutically acceptable salts thereof.

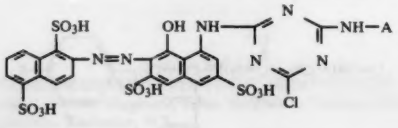
4,341,699

REACTIVE RED DYE HAVING BOTH MONOCHLOROTRIAZINYL- AND VINYLSULFONE-TYPE REACTIVE GROUPS

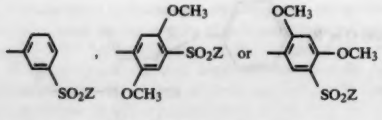
Yasuo Tezuka, Ibaraki; Masaki Sunami, Toyonaka; Takashi Omura, Ashiya, and Yutaka Kayane, Moriguchi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 7, 1980, Ser. No. 166,194
Claims priority, application Japan, Jul. 13, 1979, 54/89650
Int. Cl.³ C07C *107/08;* C09B *62/085, 62/51*
U.S. Cl. 260—153 **3 Claims**

1. A compound represented by a free acid of the formula,



wherein A is



in which Z is $-CH_2CH_2OSO_3H$ or $-CH=CH_2$.

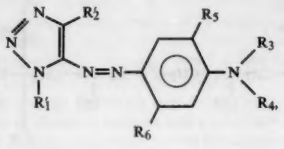
4,341,700

MONOAZO COMPOUNDS HAVING A SUBSTITUTED 1,2,3-TRIAZOLYL-5 DIAZO COMPONENT RADICAL AND AN UNSUBSTITUTED OR SUBSTITUTED 1,4-PHENYLENE COUPLING COMPONENT RADICAL

Peter Matzinger, Zürich, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Jan. 9, 1979, Ser. No. 2,085
Claims priority, application Switzerland, Jan. 10, 1978, 230/78
Int. Cl.³ C09B *29/22*
U.S. Cl. 260—157 **23 Claims**

1. A compound of the formula



wherein

R_1' is hydrogen; C_{1-4}alkyl; C_{1-4}alkyl monosubstituted by fluoro, bromo, chloro, hydroxy, (C_{1-4}alkyl)carbonyl, C_{1-4}alkoxy, cyano, thiocyano, phenoxy, (C_{1-4}alkoxy)carbonyl, phenoxycarbonyl, (C_{1-4}alkoxy)ethoxycarbonyl, carbamoyl, (C_{1-4}alkyl)carbamoyl, di-(C_{1-4}alkyl)carbamoyl, phenylcarbamoyl, N-C_{1-4}alkyl-N-phenylcarbamoyl, benzoyl, (C_{1-4}alkyl)carbonyloxy, phenylsulfonyl, C_{1-4}alkylsulfonyl, sulfamoyl, C_{1-4}alkylsulfamoyl, di-C_{1-4}alkylsulfamoyl, phenylsulfamoyl, N-C_{1-4}alkyl-N-phenylsulfamoyl, phenyl or substituted phenyl having 1 or 2 substituents each of which is independently chloro, bromo, nitro, cyano, trifluoromethyl, C_{1-4}alkyl or C_{1-4}alkoxy; C_{2-4}alkenyl; C_{2-4}alkenyl monosubstituted by chloro, bromo or phenyl; phenyl or substituted phenyl having 1 to 3 substituents each of which is independently C_{1-4}alkyl, C_{1-4}alkoxy, chloro, bromo, nitro, cyano (maximum of two), trifluoromethyl (maximum of two), (C_{1-4}alkoxy)carbonyl (maximum of two), formyl (maximum of one), (C_{1-4}alkyl)-carbonyl (maximum of one), carbamoyl (maximum of one), (C_{1-4}alkyl)carbamoyl (maximum of one), di-(C_{1-4}alkyl)carbamoyl (maximum of one), C_{1-4}alkylsulfonyl (maximum of one), phenylsulfonyl (maximum of one), sulfamoyl (maximum of one), C_{1-4}alkylsulfamoyl (maximum of one), di-C_{1-4}alkylsulfamoyl (maximum of one) or phenylsulfamoyl (maximum of one),

R_2' is cyano, thiocyano, nitro, —COOM, (C_{1-4}alkyl)carbonyl, benzoyl, (C_{1-4}alkoxy)carbonyl, (C_{1-4}alkoxy)ethoxycarbonyl, phenoxycarbonyl, carbamoyl, (C_{1-4}alkyl)carbamoyl, di-(C_{1-4}alkyl)carbamoyl, phenylcarbamoyl, C_{1-4}alkylsulfonyl, phenylsulfonyl, sulfamoyl, C_{1-4}alkylsulfamoyl, di-C_{1-4}alkylsulfamoyl or phenylsulfamoyl, wherein M is hydrogen or a non-chromophoric cation,

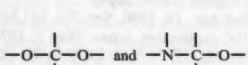
each of R_3 and R_4 is independently hydrogen; C_{1-8}alkyl; C_{1-8}alkyl monosubstituted by hydroxy, chloro, bromo, cyano, thiocyano, (C_{1-4}alkyl)carbonyl, (C_{1-4}alkoxy)carbonyl, formyloxy, (C_{1-4}alkyl)carbonyloxy, (C_{1-4}chloroalkyl)carbonyloxy, (C_{1-4}bromoalkyl)carbonyloxy, (C_{1-4}alkoxy)carbonyloxy, (C_{1-4}alkoxy)(C_{1-4}alkoxy)carbonyl, allyloxycarbonyl, chloroallyloxycarbonyl, bromoallyloxycarbonyl, C_{2-4}alkenyloxy, C_{2-4}chloroalkenyloxy, C_{2-4}bromoalkenyloxy, C_{2-4}alkynyloxy, benzoyloxy, C_{1-4}alkoxy, phenyl, phenoxy, phenyl(C_{1-4}alkoxy), (C_{1-4}alkyl)carbamoyl, di-(C_{1-4}alkyl)carbamoyl, (C_{1-4}alkyl)carbamoyloxy, di-(C_{1-4}alkyl)carbamoyloxy, phenylcarbamoyl, phenylcarbamoyloxy, phthalimidyl, saccharinyl-2, pyridyl or benzothiazolyl-2-mercapto; (C_{1-4}-alkoxy)C_{1-4}alkyl the C_{1-4}alkoxy moiety of which is monosubstituted by hydroxy, chloro, bromo, cyano, C_{1-4}alkoxy, (C_{1-4}alkoxy)carbonyl, (C_{1-4}alkoxy)carbonyloxy or (C_{1-4}alkyl)carbonyloxy; 2-hydroxy-3-propynyloxypropyl; 2-(C_{1-4}alkyl)-

carbonyloxy-3-propynyloxypropyl; 2-hydroxy-3-allyloxypropyl; 2-(C_{1-4}alkyl)carbonyloxy-3-allyloxypropyl; C_{2-4}alkenyl; C_{2-4}alkenyl monosubstituted by phenyl, chloro or bromo; C_{2-4}alkynyl; C_{5-7}cycloalkyl; C_{5-7}cycloalkyl substituted by 1 to 3 methyl groups; phenyl or substituted phenyl having 1 to 3 substituents each of which is independently chloro, bromo, methyl or C_{1-2}alkoxy, with the provisos that at least one of R_3 and R_4 is other than C_{5-7}cycloalkyl, C_{5-7}cycloalkyl substituted by 1 to 3 methyl groups, phenyl or substituted phenyl and that at least one of R_3 and R_4 is other than hydrogen,

R_5 is hydrogen, chloro, bromo, C_{1-2}alkyl, C_{1-2}alkoxy or phenoxy, and

R_6 is hydrogen; C_{1-2}alkyl; C_{1-2}alkoxy; cyano; formamido; (C_{1-4}alkyl)carbonylamino; (C_{1-4}alkyl)carbonylamino the C_{1-4}alkyl moiety of which is monosubstituted by hydroxy, chloro, bromo, C_{1-4}alkoxy, phenyl or phenoxy; benzamido; (C_{2-4}alkenyl)carbonylamino; aminocarbonylamino; (C_{1-4}alkyl)aminocarbonylamino; (C_{1-4}alkoxy)carbonylamino; (C_{1-4}alkoxy)carbonylamino the C_{1-4}alkoxy moiety of which is monosubstituted by C_{1-4}alkoxy or phenyl; C_{1-2}alkylsulfonylamino; phenylsulfonylamino; di-C_{1-2}alkylaminosulfonylamino; chloro; bromo or phenoxy, with the proviso that R_6 is other than chloro, bromo or phenoxy when R_5 is chloro, bromo or phenoxy,

with the proviso that the molecule is free of metallizable groups and



radicals.

4,341,701
PRODUCTION OF PIGMENTS

David T. Pechey, Clydebank, and John H. Coy, Stewarton, both of Scotland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 4, 1980, Ser. No. 203,940

Claims priority, application United Kingdom, Nov. 7, 1979, 7938591

Int. Cl.³ C09B *29/38, 35/08, 37/00, 41/00*

U.S. Cl. 260—161 **16 Claims**

1. A process for producing monoazo or disazo pigments, which comprises

(a) adding to a solution of a diazonium and/or tetrazonium salt of an aromatic or heterocyclic amine a solution or suspension containing 0.1–50% by weight of the theoretically required total weight of one or more coupling components, and

(b) using the product from step (a) as an additive in the production of a monoazo pigment, a disazo pigment or a mixture of monoazo and disazo pigments.

4,341,702
HERBICIDAL ACTIVE SULFOXIDE AND SULFONE COMPOUNDS

Harry Tilles, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

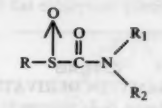
Continuation of Ser. No. 567,910, Apr. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 371,325, Jun. 18, 1973, abandoned, which is a continuation-in-part of Ser. No. 280,385, Aug. 14, 1972, abandoned. This application Dec. 24, 1980, Ser. No. 219,618

The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

Int. Cl.³ C07D *211/34, 215/08, 223/06, 295/20*

U.S. Cl. 260—239 BF **6 Claims**

1. A compound represented by the following formula



wherein R is lower alkyl having 1–4 carbon atoms or chloropropyl; R_1 and R_2 together with the nitrogen atom to which they are attached form piperidino, hexamethyleneimino, decahydroquinolino, 2,5-dimethylpiperidino, 5-ethyl-2-methylpiperidino.

4,341,703
6-[D-α-(COUMARIN-3-CARBOXAMIDO)ARYLACETAMIDO]-PENICILLANIC ACIDS OR SALTS

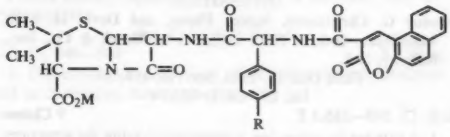
Martin L. Sassiver, Monsey, N.Y., and James H. Boothe, Montvale, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 889,675, Mar. 24, 1978, Pat. No. 4,317,774. This application Sep. 23, 1981, Ser. No. 304,727

Int. Cl.³ C07D *499/70*

U.S. Cl. 260—239.1 **9 Claims**

1. A compound of the formula:



wherein R is hydrogen or hydroxy and M is hydrogen or a pharmacologically acceptable cation.

4,341,704
4,1-BENZOXAZEPINES AND THIA ANALOGS THEREOF

Kentaro Hirai, Kyoto; Shigeru Matsutani, Sakai; Teruyuki Ishiba, Takatsuki, and Itsuo Makino, Kobe, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

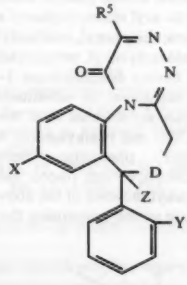
Division of Ser. No. 91,814, Nov. 6, 1979, Pat. No. 4,297,280. This application Jun. 23, 1981, Ser. No. 276,632

Claims priority, application Japan, Nov. 27, 1978, 53-146949

Int. Cl.³ C07D *513/04*

U.S. Cl. 260—243.3 **3 Claims**

1. A compound of the formula:



wherein

R^5 is C_1–C_3 alkyl,

D is oxygen or sulfur,

X is halogen or nitro,

Y is hydrogen or halogen, and

Z is hydrogen, C_1–C_3 alkoxy or C_3–C_9 dialkylaminoalkoxy; or a pharmaceutically acceptable salt thereof.

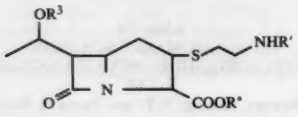
4,341,705

THIENAMYCIN DERIVATIVES

David H. Shih, Manalapan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 10, 1980, Ser. No. 195,993
Int. Cl.³ C07D *487/04*
U.S. Cl. 260—245.2 T **1 Claim**

1. A compound having the formula:



wherein: R′ is selected from p-nitrobenzyloxycarbonyl, or o-nitrobenzyloxycarbonyl; R° is o-nitrobenzyl or p-nitrobenzyl; and R^3 is o-nitrobenzyloxycarbonyl.

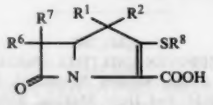
4,341,706

PROCESS FOR THE PREPARATION OF CARBAPENEM ANTIBIOTICS

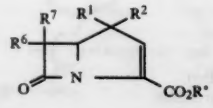
Burton G. Christensen, Scotch Plains, and David H. Shih, Manalapan, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 10, 1980, Ser. No. 196,005
Int. Cl.³ C07D *487/04*
U.S. Cl. 260—245.2 T **9 Claims**

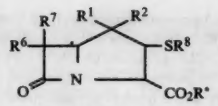
1. A process for preparing a compound having the structure:



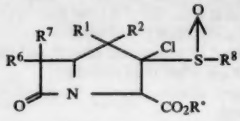
and the pharmaceutically acceptable salts thereof; wherein R^1, R^2, R^6, R^7 and R^8 are independently selected from the group consisting of hydrogen (R^1 and R^2 are not both hydrogen), substituted and unsubstituted: alkyl, alkenyl, and alkynyl, having from 1–10 carbon atoms; cycloalkyl, cycloalkylalkyl, and alkylcycloalkyl, having 3–6 carbon atoms in the cycloalkyl ring and 1–6 carbon atoms in the alkyl moieties; spirocycloalkyl having 3–6 carbon atoms; phenyl; aralkyl, aralkenyl, and aralkynyl wherein the aryl moiety is phenyl and the alkyl chain has 1–6 carbon atoms; thiophenyl, imidazolyl, tetrazolyl, furyl; thiophenylalkyl, imidazolylalkyl, tetrazolylalkyl and furylalkyl wherein the alkyl moiety contains from 1–10 carbon atoms, and wherein the substituent or substituents relative to the above-named radicals are selected from the group consisting of: amino, mono-, di-, and trialkylamino, hydroxyl, alkoxyl, mercapto, alkylthio, phenylthio, sulfamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, iodo, cyano and carboxy wherein the alkyl moieties of the above-recited substituents have 1–6 carbon atoms; comprising the steps of treating;



with HSR^8 to yield:



followed by treating with iodobenzenedichloride to yield:



followed by dehydrochlorination in the presence of a strong base at 0° to 6° C., reduction with a reducing agent at −20° to 40° C. and deblocking by hydrogenation in the presence of a catalyst at 0° to 60° C. wherein R° is selected from the group consisting of hydrogen, an alkali metal, nitrobenzyl, tertiary butylbenzyl, trichloroacetoxymethyl, and triloweralkylkammonium.

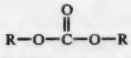
4,341,707

IMIDO CARBONATE COMPOUND, PRODUCTION THEREOF AND USES THEREOF AS REAGENT FOR FORMING ACTIVE ESTER OF AMINO ACIDS

Haruo Ogura, 55, Jinyanae, Tokiwadaira, Matsudo-shi, Chiba-ken, Japan, and Kazuyoshi Takeda, Yokohama, Japan, assignors to Haruo Ogura, Chiba, Japan

Filed Apr. 18, 1980, Ser. No. 141,365
Claims priority, application Japan, May 2, 1979, 54-53347
Int. Cl.³ C07D *403/12, 207/46;* C07F *9/09;* C07D *498/04*
U.S. Cl. 260—326 C **4 Claims**

1. A carbonate compound of the formula (I)

 (I)

wherein R represents a succinimido, phthalimido or 5-norbornene-2,3-dicarboximido group.

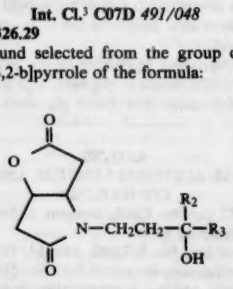
4,341,708

PROSTACYCLIN AZA ANALOGUE INTERMEDIATES

Frederick Cassidy, Harlow; Keith H. Baggaley, Redhill, and Arthur W. R. Tyrrell, Reigate, all of England, assignors to Beecham Group Limited, England

Division of Ser. No. 82,713, Oct. 9, 1979, Pat. No. 4,262,008. This application Feb. 2, 1981, Ser. No. 230,539
Claims priority, application United Kingdom, Oct. 14, 1978, 40597/78
Int. Cl.³ C07D *491/048*
U.S. Cl. 260—326.29 **1 Claim**

1. A compound selected from the group consisting of a perhydrofuro[3,2-b]pyrrole of the formula:

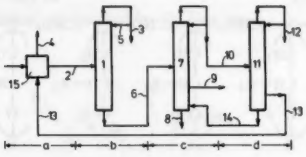


and the benzyl ethers thereof,
wherein
R_2 is hydrogen or alkyl of 1 to 4 carbon atoms and
R_3 is alkyl of 4 to 9 carbon atoms, cycloalkyl of 5 to 7 carbon atoms or alkyl of 1 to 6 carbon atoms substituted with cycloalkyl of 5 to 7 carbon atoms.

4,341,709
PREPARATION OF ε-CAPROLACTONE

Willi Hofen, Rodenbach; Herbert Klenk; Gerd Schreyer, both of Hanau; Otto Weiberg, Bruchkoebel; Helmut Waldmann, Leverkusen; Hermann Seifert, Cologne; Karl-Hermann Reissinger, Leverkusen, and Wolfgang Swodenk, Odenthal-Globusch, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 15, 1980, Ser. No. 150,260
Claims priority, application Fed. Rep. of Germany, May 19, 1979, 2920436
Int. Cl.³ C07D *313/02*
U.S. Cl. 549—272 20 Claims



1. A process for the preparation of ε-caprolactone comprising:

(a) reacting cyclohexanone with a solution of perpropionic acid in an organic solvent selected from the group consisting of an aromatic hydrocarbon consisting 6 to 10 carbon atoms, an aliphatic or cycloaliphatic hydrocarbon containing up to 12 carbon atoms and a chlorinated hydrocarbon containing 1 to 10 carbon atoms and 1 to 4 chlorine atoms at a molar ratio of cyclohexanone; perpropionic acid of about 1.1–5:1 at a temperature of about 10° to 80° C. to form a reaction mixture consisting essentially of ε-caprolactone, propionic acid and organic solvent,

(b) distilling the reaction mixture from (a) in a first distillation unit to obtain a distillate comprising the organic solvent and a distillation residue,

(c) introducing the distillation residue from (b) into a second distillation unit to obtain a distillate comprising propionic acid and unreacted cyclohexanone, removing from the second distillation unit, separately from one another and at a point below the point of introduction into the second distillation unit, ε-caprolactone and any high-boiling constituents, and,

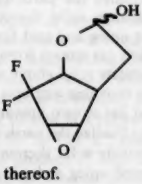
(d) distilling in a third distillation unit the distillate from (c) to obtain a distillate consisting essentially of propionic acid and a distillation residue comprising a mixture of propionic acid and cyclohexanone.

4,341,710
INTERMEDIATES FOR 10,10-DIFLUOROPROSTACYCLINS

Martin F. Haslanger, Lambertville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

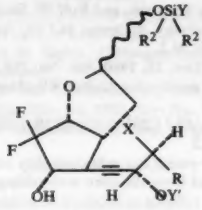
Division of Ser. No. 216,598, Dec. 15, 1980, Pat. No. 4,317,906. This application Oct. 5, 1981, Ser. No. 308,737
Int. Cl.³ C07D *307/935, 307/77*
U.S. Cl. 549—214 4 Claims

1. A compound having the structure



and all stereoisomers thereof.

3. A compound having the structure



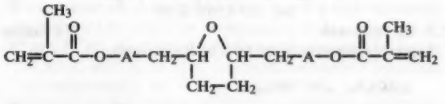
wherein Y and Y' are ether protecting groups, X is H or F, R is lower alkyl, lower alkenyl or aralkyl, and R^2 is lower alkyl or aryl, and all stereoisomers thereof.

4,341,711
DIMETHACRYLIC ACID ESTERS OF DIMETHYLOLTETRAHYDROFURAN AND ITS DERIVATIVES

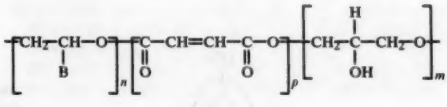
Werner Gruber, Dusseldorf, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Jun. 3, 1981, Ser. No. 269,894
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 3021941
Int. Cl.³ C07D *307/24*
U.S. Cl. 549—500 5 Claims

1. Dimethacrylic acid esters of dimethyloltetrahydrofuran and its derivatives having the formula:



wherein A and A' individually have the formula:



wherein B is a member selected from the group consisting of CH_3 and H, and n is an integer from 0 to 5, m is 0 or 1, and p is 0 or 1.

4,341,712
FLUORODINITRO COMPOUNDS

Milton B. Frankel, Tarzana, and Edward F. Witucki, Van Nuys, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 17, 1977, Ser. No. 769,748
Int. Cl.³ C07C *117/00*
U.S. Cl. 260—349 7 Claims

1. A new composition of matter selected from the group consisting of:

1,2-dibromo-3-fluorodinitroethoxypropane,
1,2-diazido-3-fluorodinitroethoxypropane,
fluorodinitroethoxyl-1-chloro-2-propanol,
3-fluorodinitroethoxy-1-chloracetone,
1-chloro-2,2-bis(difluoramino)-3-fluorodinitroethoxypropane, and
1-azido-2,2-bis(difluoramino)-3-fluorodinitroethoxypropane.

4,341,713
PROCESS FOR OBTAINING CORN OIL FROM CORN GERM

Klaus-Dieter Stolp, Grefrath, and Rolf W. Stute, Flein, both of Fed. Rep. of Germany, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Dec. 23, 1980, Ser. No. 219,772
Claims priority, application United Kingdom, Apr. 18, 1980, 8012909
Int. Cl.³ C09F 5/02; C11B 1/00
U.S. Cl. 260—412.2 8 Claims

1. A process for extracting a high quality corn oil from wet corn germ obtained from the corn wet-milling process, which requires only mild refining to produce an edible oil, comprising the steps of:

(a) milling the wet corn germ at a pH of from about 3 to about 4 and at a temperature of less than about 50° C. until at least about 80% of the germ is reduced to a particle size of less than 160 microns with at least the final stage of the milling operation being conducted in an aqueous slurry containing from about 10% to about 25% solids on a dry solids basis;

(b) diluting the aqueous slurry with water if necessary to bring the dry solids content to less than about 17%;

(c) promptly subjecting the slurry to leaching forces sufficient to separate the slurry into a solid phase and a liquid phase containing substantially all of the oil; and

(d) promptly separating the oil from the liquid phase.

4,341,714
ARYLOXYPHOSPHONIUM SALTS

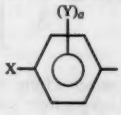
Robert H. Ellison, Schenectady, and Martin A. Byrne, Troy, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 25, 1980, Ser. No. 143,821
Int. Cl.³ C07F 9/66
U.S. Cl. 260—440 6 Claims

1. Aryloxyphosphonium salts of the formula,

$$[(RO)_nR_{4-n}{}^1P]^+[MQ_d]^-,$$

where R and R^1 are monovalent aryl radicals selected from $C_{(6-13)}$ hydrocarbon radicals and radicals of the formula,



where X is selected from $C_{(1-8)}$ alkoxy, nitrile, acyloxy, halogen and nitro, Y is selected from $C_{(1-8)}$ alkyl and X radicals, M is selected from B, As, Sb and P, Q is a halogen radical, a is a whole number equal to 0 to 4 inclusive, d is an integer equal to 4–6 inclusive and n is an integer equal to 1 to 4 inclusive.

4. The compound (p-carbomethoxyphenoxy)triphenylphosphonium hexafluoroarsenate.

4,341,715
S-ALLYL-S'-N-BUTYL-TRITHIOCARBONATE

Robert M. Parlman, and James B. Kimble, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 6, 1980, Ser. No. 194,325
Int. Cl.³ B03D 1/02; C07C 154/00
U.S. Cl. 260—455 B 1 Claim

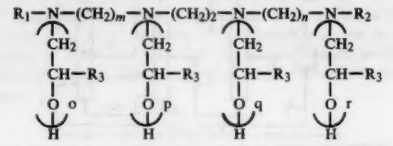
1. S-Allyl-S'-n-butyltrithiocarbonate.

4,341,716
POLYETHER POLYAMINES, THE SALTS THEREOF, PROCESS FOR THEIR MANUFACTURE AND THEIR USE

Helmut Diery, Kelkheim; Wolfgang Wagemann, Tremsbüttel; Joachim Weide, Kelkheim; Reinhold Deubel, Bad Soden am Taunus, and Martin Hille, Liederbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 22, 1980, Ser. No. 189,671
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1979, 2938623; May 5, 1980, 3017198
Int. Cl.³ C07C 93/04, 91/10, 91/12, 89/02, 143/68; C07F 9/09
U.S. Cl. 260—456 A 4 Claims

1. Polyether polyamines of the formula

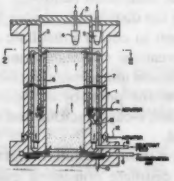


in which R_1 and R_2 are identical or different and denote C_8–C_{30}-alkyl, C_8–C_{30}-alkenyl or C_8–C_{24}-alkoxypropyl, m and n are 2 or 3, R_3 is hydrogen or methyl and the sum of o+p+q+r is an integer from 10 to 600, and the salts thereof.

4,341,717
REACTOR FOR CONTACTING GASES AND A PARTICULATE SOLID

James L. Callahan, Bedford Heights; Harley F. Hardman, Lyndhurst, and Ernest C. Milberger, Solon, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 758,607, Jan. 12, 1977, Pat. No. 4,152,393.
This application Dec. 8, 1978, Ser. No. 967,557
Int. Cl.³ C07C 120/14
U.S. Cl. 260—465.3 9 Claims



1. A process for effecting separate and successive contact of a particulate solid with a first gas stream and a second gas stream without substantial mixing of said gas streams comprising:

establishing a particulate solid flowpath for continuous recirculation of particulate solid, said flowpath having in order a first upleg, a first downleg, a second upleg, a second downleg and a return leg for returning particulate solid from said second downleg to said first upleg,

flowing said first gas stream upwardly through said first upleg so as to fluidize the particulate solid therein and elevate the particulate solid therein to a first junction between said first upleg and said first downleg,

withdrawing said first gas stream from above said first junction so that particulate solid above said first junction falls through said first downleg and into said second upleg,

flowing said second gas stream upwardly through said second upleg so as to fluidize the particulate solid therein and elevate the particulate solid therein to a second junction between said second upleg and said second downleg, and

withdrawing said second gas stream from above said second junction so that particulate solid above said second junction falls through said second downleg and into said return leg for return to said said first upleg.

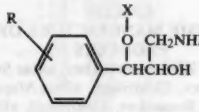
4,341,718

α-[(ALKYLAMINO)-METHYL]-β-ARYLOXY-BENZENEETHANOLS EXHIBITING ANTIARRHYTHMIC ACTIVITY

Dong H. Kim, Wayne, and Stanley C. Bell, Penn Valley, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,294
Int. Cl.³ C07C *83/00*
U.S. Cl. 260—501.18 16 Claims

1. A compound represented by the formula:



wherein R represents hydrogen, halogen, a lower alkyl group, or a lower alkoxy group; X represents a phenyl group, a 1-naphthyl group, or a phenyl group substituted by halogen, a lower alkyl group or a lower alkoxy group; R_1 represents a lower alkyl group; and the pharmacologically acceptable acid addition salts thereof.

4,341,719

PROCESS FOR THE PREPARATION OF 1-AMINO-2-ETHOXY-NAPHTHALENE-6-SULPHONIC ACID

Rolf Pütter, Duesseldorf; Theodor Pfister, Wuppertal; Manfred Niese, Leverkusen, and Peter Wenzl, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 26, 1981, Ser. No. 238,327
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1980, 3010372
Int. Cl.³ C07C *143/66*
U.S. Cl. 260—509 12 Claims

1. A process for the preparation of 1-amino-2-ethoxy-naphthalene-6-sulphonic acid from 2-hydroxy-naphthalene-6-sulphonic acid which comprises:

A. contacting 2-hydroxy-naphthalene-6-sulphonic acid with at least an equimolar amount of an alkali metal nitrite in an aqueous solution or suspension in the presence of hydrochloric acid, the solution or suspension having a pH in the range of 2 to 5 and being at a temperature of 0° to 20° C.;

B. reducing the reaction product of step A in an aqueous suspension by contacting the same with excess iron in the presence of at least an equivalent amount of iron (II) ions, relative to the reaction product obtained according to step A, in the presence of a mineral acid at a temperature from 50° to 120° C., and treating the thus-obtained reaction mixture with aqueous alkali metal hydroxide in the presence of iron oxide;

C. contacting the product of step B with excess acetic anhydride in an aqueous solution or suspension at a pH in the range of 3 to 10 at a temperature from 0° to 100° C.;

D. contacting the product of step C with an ethylating agent in the presence of an acid binding agent in an aqueous-organic solvent or diluent in a pH range from 8 to 14 at a temperature from 20° to 150° C.; and

E. deacetylating the product of step D by contacting the same at reflux with an aqueous alkali metal hydroxide.

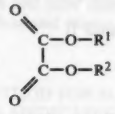
4,341,720

PROCESS FOR THE PREPARATION OF OXALYL CHLORIDE

Axel Vogel; Guido Steffan, both of Odenthal; Karl Mannes, and Viktor Trescher, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 73,980, Sep. 10, 1979, abandoned. This application Mar. 24, 1981, Ser. No. 247,186
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840435
Int. Cl.³ C07C *57/00*
U.S. Cl. 260—544 Y 20 Claims

1. In a process for the preparation of oxalyl chloride from an oxalic acid compound of the formula



wherein R^1 and R^2 are identical or different and represent hydrogen or a lower alkyl radical,

and phosphorus pentachloride in the presence of phosphorus oxychloride, the improvement wherein the reaction is carried our in the presence of 0.001 to 0.5 part by weight per part by weight of phosphorus pentachloride of pyridine or an amino compound of the formula

wherein

R^3 represents alkyl, aralkyl, aryl or an acyl group, optionally substituted by amino or carboxamido and

R^4 and R^5 are identical or different and represent hydrogen or alkyl, aralkyl, or aryl, optionally substituted by amino or carboxamido, or

R^4 and R^5 are linked in an optionally substituted carbocyclic ring with 5 to 7 ring members, which optionally contains nitrogen, sulphur and/or oxygen and is optionally substituted by alkyl, aralkyl, aryl and/or amino groups, and

R^3 represents hydrogen or alkyl, which can be linked with R^4 to form a carbocyclic ring, aralkyl or aryl, optionally substituted by an amino or carboxamido group, or optionally forms a double bond in one of the radials R^4 or R^5,

and the oxalyl chloride formed is distilled off during the reaction.

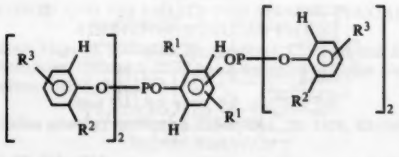
4,341,721

DIPHOSPHITES

Wadim Batorewicz, New Haven, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Oct. 1, 1980, Ser. No. 193,220
Int. Cl.³ C07F *9/141*; C08K *5/52*
U.S. Cl. 260—930 12 Claims

1. A diphosphite having the structural formula



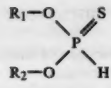
wherein R^1 and R^2 may be the same or different and are C_4 to C_{12} tertiary alkyl or C_9 to C_{14} tertiary aralkyl; R^3 is hydrogen, C_1 to C_{18} alkyl or C_7 to C_{18} aralkyl.

4,341,722
2-THIONO-(2H) [1,3,2] DIOXAPHOSPHORINANES (PHOSPHOLANES)

Horst Zinke, Ernsthofen, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,701
Claims priority, application Switzerland, Jul. 6, 1979, 6351/79
Int. Cl.³ C07F *9/21*
U.S. Cl. 260—937 **2 Claims**

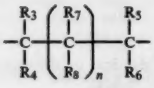
1. A compound of formula I



(I)

wherein

R_1 and R_2 together form a group of formula II



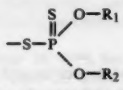
(II)

in which

n is nought or 1,

when n is 1, R_3, R_4, R_5 and R_6 independently of one another are each hydrogen, C_1–C_4-alkyl, cyclohexyl or phenyl, and

when n is nought, R_4, R_5 and R_6 are as defined above, R_3 is $—CH_2Z$ in which Z is $—XR_{10}$, $—N(R_{11})R_{12}$, —S—P(S)-$(OR_{10})_2$ or a group of formula III



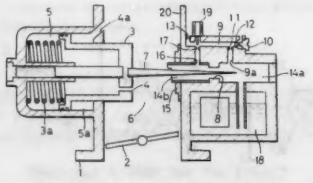
(III)

wherein R_1 and R_2 are as defined above, X is oxygen or sulfur, R_{10}, R_{11} and R_{12} independently of one another are each C_1–C_{18} alkyl, C_5–C_{12}-cycloalkyl, phenyl, C_7–C_9-aralkyl, or said phenyl or said C_7–C_9-aralkyl substituted by one or two C_1–C_{12}-alkyl groups, or R_{10}, R_{11} and R_{12} are each C_2–C_{10}-alkoxyalkyl or C_3–C_{20}-alkoxycarbonylalkyl, and R_7 and R_8 independently of one another are each nitro, cyano, C_2–C_{19}-alkoxycarbonyl, C_2–C_{18}-alkanoyl or a group $(R_9O)_2P(O)—$ in which R_9 is C_1–C_{18}-alkyl, or R_7 and R_8 together are 2-butenylene or 2-pentenylene, or R_7 can also be hydrogen, C_1–C_4-alkyl, cyclohexyl or phenyl.

4,341,723
VARIABLE VENTURI CARBURETOR

Hidenori Hirosawa, 6-2, Nishihata, Kyowa-cho, Obu-shi, Aichiken, Japan

Filed Dec. 23, 1980, Ser. No. 219,524
Claims priority, application Japan, Aug. 26, 1980, 55-121546[U]
Int. Cl.³ F02M *9/06*
U.S. Cl. 261—44 C **4 Claims**



1. In combination with a variable venturi carburetor for an internal combustion engine comprising a venturi portion, a float chamber, a main fuel passage communicating with said venturi portion and with said float chamber, a main jet provided in said main fuel passage and a movable metering needle, a free end of said metering needle being adapted to control the size of said main jet and the base portion of said metering needle being mounted to a suction piston adapted to transversely move with respect to said venturi portion in response to the condition of load on said internal combustion engine, the improvement comprising a fuel bypass detouring said main jet for supplying part of the fuel in said main fuel passage to said venturi portion, a valve provided at the downstream portion of said fuel bypass for effectively closing said fuel bypass at stoppage of the engine, an air passage provided upstream of said valve and in said fuel bypass for communicating with atmospheric air and at least one air throttle including a variable throttle provided in said air passage.

4,341,724
METHOD FOR THE MANUFACTURE OF CERAMIC PRODUCTS

Leonid L. Koshlyak, Zheleznodorozhny, ulitsa Svobody, 9a, kv. 134; Jury P. Kareev, Elektrougli, ulitsa Mayakovskogo, 22, kv. 62; Evgeny A. Romankov, Elektrougli, ulitsa Shkolnaya, 45, kv. 53; Sergei N. Zotov, Pavlovsky posad, Komsomolsky pereulok, 3, all of Moskovskaya oblast; Marx S. Belopolsky, ulitsa Oxkaya, 8, kv. 87, and Villen V. Kalinovsky, Leningradskoe shosse, 92, kv. 54, both of Moscow, all of U.S.S.R.

Filed Jul. 25, 1978, Ser. No. 927,757
Claims priority, application U.S.S.R., Aug. 3, 1977, 2513702
Int. Cl.³ C04B *33/30*
U.S. Cl. 264—27 **2 Claims**

1. A method for the manufacture of ceramic products comprising moulding products of a starting plastic body and subsequent heat treatment of the moulded products during their continuous movement; said heat treatment being performed at the stage of drying from the moulding moisture content to an equilibrium moisture content with external and internal heat application to the products with an intensity ensuring maximum moisture removal rate of not more than 0.5% per minute, the internal heat application being performed until maximum hygroscopic moisture content of products is achieved, and the external heat application being performed after the shrinkage of the products is over and thereafter firing the products.

4,341,725
MOLDING REFRACTORY AND METAL SHAPES BY SLIP-CASTING

Gerald Q. Weaver, Mountain Rd., Princeton, Mass. 01541, and Bruce G. Nelson, Box 42, West Wardsboro, Vt. 05360

Continuation-in-part of Ser. No. 860,129, Dec. 13, 1977, abandoned. This application May 19, 1980, Ser. No. 150,781
Int. Cl.³ C04B *35/02*
U.S. Cl. 264—28 **6 Claims**

1. A method of slip-casting, comprising the steps of: forming an appropriately shaped slip-casting mold; preparing a casting slip; casting said slip into said mold; freezing the cast slip; drying said frozen casting; and firing the green shape; wherein the improvement comprises; incorporating in said casting slip, an amount of a hydrogen bond forming compound sufficient to prevent the formation, in said frozen casting, of ice crystal large enough to result in scars in the dried casting.

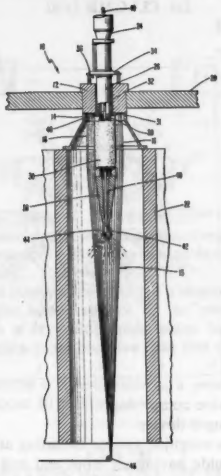
4,341,726
PROCESS FOR PRODUCING MELT-SPUN FILAMENTS

William W. Wilkes, Florence, S.C., assignor to Fiber Industries, Inc., New York, N.Y.

Division of Ser. No. 164,425, Jun. 30, 1980, Pat. No. 4,288,207. This application Apr. 7, 1981, Ser. No. 251,816
Int. Cl.³ B29H *21/04*
U.S. Cl. 264—130 **4 Claims**

1. In a melt-spinning process of the type wherein molten

polyester polymer is extruded downwardly through a filter pack and through an annular array of holes of a spinneret to form a circularly arranged group of filaments, quench gas is delivered downwardly through said pack and spinneret coaxially relative to said row of holes and then redirected and discharged outwardly through the group of filaments, a finish substance is applied to the filaments, and the filaments are



gathered and redirected at a stationary or rotating guide, the improvement wherein the finish application comprises the steps of:

conducting the finish substance through said pack and through said spinneret and at least partly internally of the flow of quench gas, and

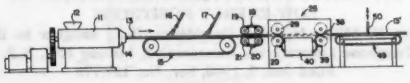
discharging the finish substance, in mist form, outwardly in a low turbulence spray pattern from within the group of filaments at a level below the discharge of quench gas.

4,341,727

PROCESSING VINYL EXTRUDATE

Clifford A. Landsness, Akron; William R. Rinker, Cuyahoga Falls; Thomas E. Barnes, Clinton, and Maurice E. White, Akron, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 14, 1981, Ser. No. 225,070
Int. Cl.³ B29C *17/08*
U.S. Cl. 264—145 **6 Claims**



1. An apparatus for the continuous processing of an extruded vinyl strip comprising an extruder for extruding a thin vinyl strip of material, a punching machine mounted in alignment with said extruder, conveyor means mounted between said extruder and punching machine for conveying said vinyl strip from said extruder to said punching machine, said punching machine having a first pair of cooperative rotary die means for receiving said vinyl strip in their bite portion, a second pair of cooperative rotary die means having a bite portion in alignment with said bite of said first pair of rotary die means, each of said first pair of rotary die means having male die cutting means on the peripheral surface thereof, operative to perform embossing cuts on said vinyl strip, one of said second pair of rotary die means having a plurality of male punchout die means on the peripheral surface thereof, and the other one of said second pair of rotary die means having a plurality of female die means on the peripheral surface thereof complimentary to said male punch out die means to facilitate the removal of the blanks punched by said punching machine.

3. A process for stamping out a plurality of closely spaced blanks out of a thin sheet of material comprising the steps of extruding a sheet of vinyl material, cooling said material as said material is conveyed, embossing said sheet material on the upper and lower surface at a first station along aligned shapes leaving a thin membrane interconnecting each of said blank with said sheet material, and punching out said membrane of each of said blanks at a second station.

4,341,728

METHOD FOR MAKING AN IUD WITH SHRINKING OF A MEDICATED ATTACHMENT ONTO A SUPPORT

Dale N. Robertson, Scotch Plains, N.J., and John Braun, Westbury, N.Y., assignors to The Population Council, Inc., New York, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,858
Int. Cl.³ B29C *5/00, 27/00;* B29D *3/00*
U.S. Cl. 264—161 **13 Claims**

1. A method of making a combination intrauterine device and drug release attachment comprising:

(a) providing a nonfiller-containing formable silicone rubber for a carrier material;

(b) mixing together a drug for in utero administration and a formable carrier material from step (a);

(c) providing a nonmedicated and relatively stable platform for intrauterine placement;

(d) forming the mixture of drug and carrier material into an attachment adapted to fit onto the platform;

(e) mounting the attachment on the platform structure for controlled release of the drug in utero; and

(f) said mounting including expanding the attachment by immersion in a solvent suitable for swelling the polymer and in which the polymer and the drug are substantially insoluble, and shrinking the expanded attachment about a portion of the platform.

4,341,729

METHOD AND APPARATUS FOR MAKING BIAXIALLY STRETCHED TUBULAR FILMS

Kohtaro Hayashi, Chibaken; Ko Morihara, Chibashi, and Kohji Nakamura, Chibaken, all of Japan, assignors to Chisso Corporation, Tokyo, Japan

Filed Dec. 19, 1979, Ser. No. 105,220
Claims priority, application Japan, Dec. 25, 1978, 53-159456
Int. Cl.³ B29D *7/24*
U.S. Cl. 264—566 **4 Claims**

1. In an apparatus for making biaxially stretched thermoplastic synthetic resin, which comprises pinch rolls for the delivery

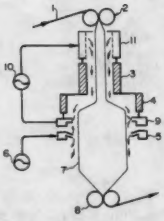
of a tubular resin film, stretching pinch rolls to take up the resin film, means to inflate said tubular film with pressurized gas to form a bubble having a maximum diameter and heating means intermediate said delivery and stretching rolls that is adapted to apply heat to said resin film, the improvement which comprises

(a) cooling means located downstream of said heating means and adapted to apply a stream of cooling gas against the maximum diameter portion of said bubble,

(b) a suction ring extending annularly around the maximum diameter portion of said bubble at a point intermediate said heating means and said cooling means, the plane of said suction ring being perpendicular to the line extending between said pinch rolls, and

(c) a suction fan connected to said suction ring which is adapted to suck gas through said suction ring,

whereby gas flow around the stretching bubble is made uniform and at least a portion of the hot gases caused by said heating means and at least a portion of the cooling gases generated by said cooling means are simultaneously sucked into said suction ring in an annular zone surrounding the bubble to thereby establish a sharply delineated annular separation line



between the portion of the bubble that is being heated and the portion of the bubble that is being cooled.

4. In a method for making biaxially stretched thermoplastic synthetic resin by longitudinally stretching a tubular resin film between two spaced apart points and at the same time inflating said tubular film with pressurized gas to form a bubble having a maximum diameter, the improvement which comprises

(a) heating said tubular film in advance of the point where it expands into a bubble having maximum diameter,

(b) applying a stream of cooling gases against the exterior of said bubble at a location downstream of the point where the bubble first reaches its maximum diameter,

(c) applying a suction force at a point intermediate the locations where the film is heated and then cooled in accordance with (a) and (b), so that both at least a portion of the hot gases caused by said heating means and at least a portion of the cooling gases generated by the cooling means are simultaneously sucked away from the exterior of the surface of the bubble,

whereby the gas flow around the exterior of the film is made uniform and a sharply delineated annular separation line is established between the stretching portion of the bubble and the cooling portion of the bubble.

4,341,730

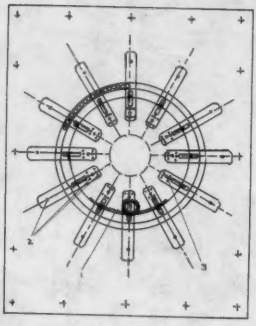
BEAM DANCER FUSION DEVICE

Henry B. Maier, 6 Sealey Ave., Hempstead, Long Island, N.Y. 11550

Continuation-in-part of Ser. No. 940,332, Sep. 7, 1978, abandoned, and a continuation-in-part of Ser. No. 76,699, Sep. 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 924,386, Jul. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 773,914, Mar. 3, 1977, Pat. No. 4,137,096. This application May 12, 1980, Ser. No. 148,857

Int. Cl.³ G21B *1/00*

U.S. Cl. 376—103 **4 Claims**



1. A fusion device comprising

(a) an energy input device

(b) an optical waveguide system including at least one first main waveguide having an input end and output end, a plurality of second branched waveguides having input ends and output ends, means for coupling the input end of said first main waveguide to said energy input device, means for coupling the input ends of said plurality of second branched waveguides to the output end of said main waveguide, the diameter of said first main waveguide being substantially larger than the diameter of a single one of said second branched waveguides;

(c) mechanical means for moving the output ends of said plurality of second branched waveguides;

(d) means for establishing a focal point, said mechanical means directing the output ends of said plurality of second branched waveguides to said focal point;

(e) a target including a fusion fuel and a thiosulfate salt, positioned at said focal point, wherein upon activation of the energy input device an energy irradiation is produced at the focal point which then comprises a superimposition of energy flux on the target surface from the mechanical movement of the output ends of said second branched waveguides during irradiation.

4,341,731

APPARATUS FOR EFFICIENT GENERATION OF LOW-ENERGY POSITRONS

Allen P. Mills, Jr., New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 7, 1980, Ser. No. 109,776

Int. Cl.³ G21G *1/06*

U.S. Cl. 376—156 **9 Claims**

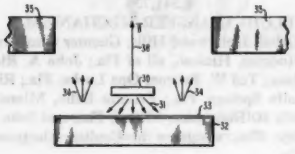
1. Apparatus for generating positrons of approximately thermal energy, comprising

(a) a source of positrons comprising radioactive atoms that decay by positron emission, distributed throughout an active volume of a substrate, the active volume having a free surface, the radioactive atoms having a concentration profile, measured in a direction normal to the free surface, with the concentration profile having a continuous negative slope with increasing distance from the free surface;

(b) in an evacuable enclosure, a positron moderator, comprising a solid object having at least one active surface, at least a part of the active surface having a negative positron work function, the moderator being positioned so that a substantial fraction of the positrons emitted from the active volume of the source impinge on the moderator;

CHARACTERIZED IN THAT

(c) the substrate of the source comprises a backing layer and a diffusion layer, the diffusion layer covering at least part of a surface of the backing layer, and the slope of the concentration profile of the radioactive atoms, measured in the direction normal to the free surface, has at least one discontinuity,



(d) the object consists essentially of a single crystal, oriented to make the active surface of the object substantially parallel to a crystallographic plane having a positron work function more negative than that of clean Al (100), and

(e) the enclosure is maintainable at a pressure less than or equal to about 10^{-9} Torr.

4,341,732

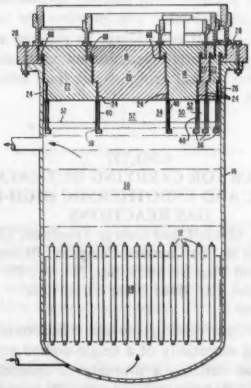
NUCLEAR REACTOR DIP SEAL

John E. Sharbaugh, Bullskin Township, Westmoreland County, and Joseph M. Kazan, New Stanton, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 29, 1979, Ser. No. 43,407

Int. Cl.³ G21C *13/06*

U.S. Cl. 376—206 **3 Claims**



1. In a liquid metal cooled nuclear reactor including a vessel, an upper structure atop said vessel, a core disposed within said vessel, within said vessel a liquid coolant pool substantially filling said vessel, said liquid coolant pool having an upper surface located above said core, a cover gas disposed in a region between said coolant pool upper surface and said upper structure, said upper structure having a first component and a second adjacent component with an annular clearance space between said adjacent components, one of said components being rotatable with respect to said adjacent component, improved means for separating said cover gas from said annular clearance space comprising an annular trough affixed to one of said components by a member extending downwardly from said one of said components, and an annular blade affixed to the other of said adjacent components and extending downwardly so as to be suspended within said trough, such that said downwardly extending member and downwardly extending blade traverse the region occupied by said cover gas and said upper coolant pool surface, and extend into said liquid coolant pool.

4,341,733

METHOD OF AND DRIVE FOR ACTUATING ABSORBER RODS IN PEBBLE BED REACTORS

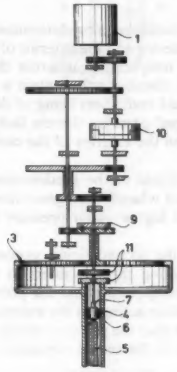
Herbert Haas, Aachen, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Feb. 8, 1980, Ser. No. 119,764

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1979, 2904941

Int. Cl.³ G21C *7/16*

U.S. Cl. 376—226 **4 Claims**



1. A drive for actuating absorber rods in pebble bed reactors, with which a respective rod is selectively movable into and out of the ball pile in a rotary manner with limited advancing speed and with both a longitudinal displacement as well as a rotation of a rod operatively connected therewith, said drive comprising in combination;

a drive motor;

an axially fixed advancing spindle having a spindle nut rigidly connected with said absorber rod;

a rotary tube driven at constant speed, said spindle nut being journalled in said rotary tube in such a way permitting said nut to be axially displaceable yet having said nut fixed against rotation in said tube;

a free-running drive or freewheel operatively connected with said drive motor and said spindle, removal of said rod from said ball pile occurring at a fixed ratio between driving mechanism and driven end by said freewheel; and

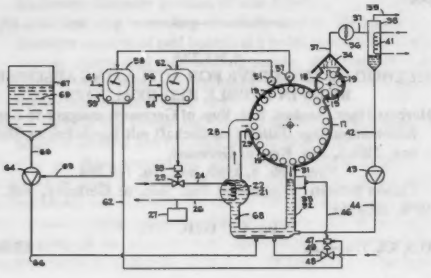
a hydrodynamic torque limiting coupling provided between said drive motor and said spindle to limit transferrable torque, the rotary speed of said spindle being limited during introduction of said rod into said ball pile by said free-running drive causing engagement when the driven end speed of said coupling equals the driving speed by transmitting to said rod an advancing force commensurate with ball strength and rod stability so that ball destruction and bending-through of the rod are safely avoided wherein the linear movement of said rod is transmitted thereto only by said coupling.

4,341,734

METHOD FOR PROVIDING OVERRIDING PRESSURE IN HEAT PROCESSING SEALED CONTAINERS

Andrea Darecchio, Parma, Italy, assignor to FMC Corporation, Chicago, Ill.

Filed Jun. 19, 1980, Ser. No. 161,085
Int. Cl.[3] A61L 2/06; A23L 3/08
U.S. Cl. 422—25 11 Claims



1. A method of maintaining a predetermined pressure differential between the interior and the exterior of sealed containers at a predetermined temperature wherein the containers are disposed in a sealed chamber and contain a first liquid and a headspace therein, said containers being of the type capable of maintaining an internal pressure therein that is different than the pressure acting on the exterior of the containers; comprising the steps of

heating a second liquid to the predetermined temperature, said second liquid when heated generating a vapor having a predetermined higher vapor pressure than the first liquid, and

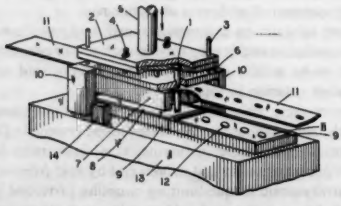
introducing only the second liquid vapors into the sealed chamber for heating the containers to substantially said predetermined temperature and for providing a pressure within the chamber acting on the exterior of the containers that is higher than the pressure within the containers to prevent damage to the sealed containers.

4,341,735

SAMPLE CARRIER MATERIAL HANDLING APPARATUS

Paul E. Seifried, New City, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 28, 1980, Ser. No. 134,843
Int. Cl.[3] G01N 1/04, 1/10, 33/48
U.S. Cl. 422—66 1 Claim



1. An apparatus for handling sample carrier material comprising:

(a) a punch holder;

(b) at least one punch means raisably and lowerably mounted on said holder;

(c) a die having an upper and a lower surface, the thickness of said die being less than the punch means lower travel from said die upper surface, said die in functional alignment with said punch means, and said die upper and lower surface in a cutting and delivery position, respectively, of said sample material; and

(d) control means to regulate said punch means whereby sample carrier material is placed on said die upper surface; said punch means is lowered by said control means such that said sample material is cut and forced through said die by said punch means, is delivered out of said die at said lower surface and is deposited onto a media; and said punch means is raised by said control means.

4,341,736

FLUID TRANSFER MECHANISM

Vladimir J. Drbal, Hollywood Hills; Guenter Ginsberg, Miami; Bruce J. Hodgins, Hialeah, all of Fla.; John A. Richardson, Shirley, Mass.; Ted W. Britton, Opa Locka, Fla.; Richard M. Grimm, Zolfo Springs, Fla.; Ernesto Bello, Miami Springs, Fla.; Rodolfo R. Rodriguez, Miami, Fla., and Ivan K. Saltz, Cooper City, Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Continuation of Ser. No. 115,691, Jan. 28, 1980, Pat. No. 4,276,260. This application Mar. 27, 1981, Ser. No. 248,276
The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.
Int. Cl.[3] G01N 1/12, 1/14
U.S. Cl. 422—100 3 Claims

1. A multiple position fluid transfer mechanism having a generally elongate, movable arm member for holding fluid probe means at a distal end thereof to pick up and dispense fluid, comprising oscillating means mounted to said arm member for oscillation of said probe to stir fluid into which said probe is inserted.

4,341,737

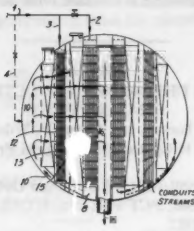
APPARATUS FOR CARRYING OUT CATALYTIC EXOTHERMIC AND ENDOTHERMIC HIGH-PRESSURE GAS REACTIONS

John V. Albano, Oradell, and George Friedman, Clark, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed May 22, 1979, Ser. No. 41,378
Int. Cl.[3] B01J 8/04; C01C 1/04
U.S. Cl. 422—148 6 Claims

1. A reactor for performing catalytic reactions in the gaseous phase, consisting essentially of a single-walled pressure shell, containing means defining a plurality of spaced apart, in a radial direction, substantially concentrically disposed annular catalyst beds with particulate catalyst in each bed; a plurality of annular shaped, substantially concentrically disposed cross-flow heat exchange means; said annular catalyst beds and said annular heat exchange means being substantially concentric and alternatingly disposed: means for passing a synthesis fluid into said shell through said heat exchange means and said catalyst beds in a radial direction; each said cross-flow heat exchange means being operatively associated with each of said catalyst beds for providing inter-stage feed-effluent heat exchange and having a shell side and a tube side adjacent one end

of said bed wherein the shell-side fluid in each said cross-heat exchange means flows in a radial direction and substantially



normal to that in which the tube-side fluid flows; and means for withdrawing a product gas from the pressure shell.

4,341,738

DECOMPOSITION AND OXIDATION SYSTEM

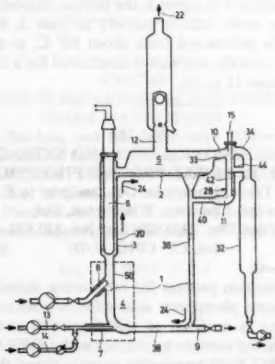
Gerhard Kemmler, Karlsruhe; Herbert Wieczorek, Weingarten, and Jürgen Plessing, Stutensee, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe Gesellschaft mit beschränkter Haftung, Karlsruhe, Fed. Rep. of Germany

Filed Oct. 16, 1980, Ser. No. 197,703

Claims priority, application Fed. Rep. of Germany, May 8, 1980, 3017547

Int. Cl.³ B01J *19/24*

U.S. Cl. 422—184 **14 Claims**



1. An apparatus for decomposing difficultly soluble substances, or for oxidizing organic wastes containing difficultly soluble substances and decomposing the difficultly soluble substances contained therein, in which apparatus the substances and/or wastes are reacted with at least one hot acid, and from which apparatus, heat losses are compensated, comprising:

(a) a ring-shaped reaction vessel containing said hot acid and including at least one horizontally extending region and at least one vertically extending region;

(b) a feeder means connected to said vertically extending region for adding to said reaction vessel the substances and/or wastes, further acid, and gas;

(c) degasification means conducted to said horizontally extending region; and

(d) driving means to cause the circulation of materials present in said reaction vessel in the form of a reaction gas produced during the introduction of at least one of the substances, the wastes, and the further acid.

4,341,739

PHOSPHORIC ACID AMMONIATION APPARATUS

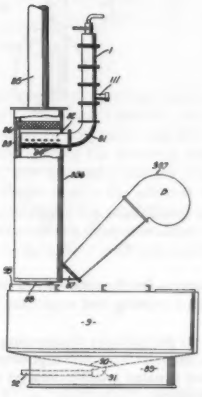
John D. Ellis, Upland, Calif.; George Crichton, Guadalajara, Mexico; Millard C. Godwin, and George C. Morris, both of Lakeland, Fla., assignors to Leathers Chemical Company, Limited, Yorkshire, England

Continuation of Ser. No. 145,493, May 20, 1971, Pat. No. 4,185,075, which is a continuation-in-part of Ser. No. 684,348, Nov. 20, 1967, abandoned, and Ser. No. 785,321, Dec. 19, 1968, abandoned, and a continuation of Ser. No. 853,683, Aug. 28, 1969, abandoned. This application Jul. 24, 1979, Ser. No. 60,044

The portion of the term of this patent subsequent to Jan. 22, 1997, has been disclaimed.

Int. Cl.³ B01J *8/04;* **C01B** *15/16;* **C05B** *11/00*

U.S. Cl. 422—207 **14 Claims**



1. Apparatus suitable for the ammoniation of phosphoric acid and the production of an aqueous ammonium phosphate solution, assembled in combination, comprising,

(a) a fluid reactor means having a plurality of inlet means at one end thereof suitable for the admission of phosphoric acid, ammonia and water, said inlet means being so positioned as to provide for rapid ammoniation of the phosphoric acid with the evolution of heat, to produce a reaction product mixture containing a liquid portion and steam, said fluid reactor means having an exit means adapted for the expulsion, at the other end thereof, of the reaction products mixture therefrom by steam generated by the heat liberated in the ammoniation process,

(b) columnar vessel means having an outlet means at one end thereof and enclosing at the other end thereof the said other end of said fluid reactor means,

(c) a plurality of barrier means obturating said columnar vessel means in a spaced-apart relationship, said barrier means having a plurality of apertures therein for the passage of reaction products mixture therethrough,

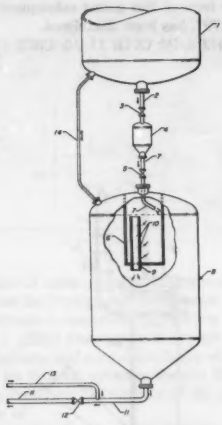
(d) inlet quench means connected to said columnar vessel means for the introduction into said columnar vessel means of a liquid aqueous quenching fluid, and

(e) means, in communication with said other end of said fluid reactor means, for separating steam from the liquid portion of the reaction mixture and removing the separated steam from said apparatus.

4,341,740
CATALYST FLOW DAMPENER

Arthur R. Greenwood, Niles, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 132,969, Mar. 24, 1980, abandoned. This application Jun. 18, 1981, Ser. No. 274,909
The portion of the term of this patent subsequent to Dec. 29, 1998, has been disclaimed.
Int. Cl.[3] B01J *8/12*; B65G *65/23, 65/32*
U.S. Cl. 422—310 3 Claims



1. An apparatus for the recovery of hot regenerated catalyst particles from a moving bed regenerator column which comprises:

(a) means for periodically discharging a measured volume of said hot particles from said regenerator column into a flow dampener situated inside a catalyst hopper of substantially larger volume;

(b) said flow dampener comprising an enclosed chamber and an open-ended standpipe, the major portion of the standpipe being within said chamber and having its lower open end below the bottom of the chamber, said major portion of the standpipe within the chamber containing a plurality of vertically spaced apart outlet openings through which said flow dampener is in open communication with said catalyst hopper;

(c) said outlet openings being vertically spaced apart to provide a particle hold up volume between said outlet openings substantially equivalent to the aforesaid measured volume; and,

(d) said outlet openings being individually sized to accommodate a particle flow rate up to about 50% of the average flow rate at which said particles are discharged into said flow dampener, whereby a substantially continuous flow of hot particles is discharged from said flow dampener through said outlet openings and into said catalyst hopper.

4,341,741
RECOVERY OF RHODIUM FROM CARBONYLATION RESIDUES

Walter C. Davidson, Mahwah, N.J., and Benjamin F. Fieselmann, Congers, N.Y., assignors to The Halcon SD Group, Inc., New York, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,193
Int. Cl.[3] C01G *55/00*
U.S. Cl. 423—22 11 Claims

1. A process for recovering Group VIII noble metals bound to residues of noble metal catalyzed carbonylation reactions wherein said residues are separated from the carbonylation reaction mixture and thereafter residues containing unextracted bound noble metals are treated with a reagent comprising an amine, in an amount sufficient to free said noble metals from said residues and enable said bound noble metals to be extracted by a subsequent contact with an aqueous halogen acid.

4,341,742
CUPROUS CHLORIDE PRODUCTION FROM CHALCOPYRITE

Robert H. Clark, Tucson, and Joseph P. Wilson, Tubac, both of Ariz., assignors to Cyprus Metallurgical Processes Corp., Los Angeles, Calif.

PCT No. PCT/US80/01315, § 371 Date Oct. 6, 1980, § 102(e) Date Oct. 6, 1980, PCT Pub. No. WO82/01197, PCT Pub. Date Apr. 15, 1982
PCT Filed Oct. 6, 1980, Ser. No. 261,124
Int. Cl.[3] C01G *3/04*
U.S. Cl. 423—39 4 Claims

1. A process for producing cuprous chloride from copper sulfide ores containing chalcopyrite comprising performing an initial leach of the chalcopyrite in accordance with the general reaction:

$$(3X+12Y)Cu^{++}+CuFeS_2+8YH_2O \quad (4X+12Y)Cu^{+}+X\text{-}Fe^{++}+(2X-2Y)S^{\circ}+2YSO_4=+16YH^{+}+(1-X\text{-})CuFeS_2$$

under a balance of reaction conditions of reaction temperature and time, of initial mole ratio of cupric ion to chalcopyrite copper and of initial mole ratio of ferrous chloride to chalcopyrite copper, such that "X" is maintained from about 0.35 to about 0.9, "Y" is maintained from about 0.075 to about 0.4, and the initial summation of $3X+12Y$ is greater than 3, wherein the cupric ion to chalcopyrite copper mole ratio is initially within the range of about 3 to about 6, the ferrous chloride to chalcopyrite copper mole ratio is initially at least 3, the reaction temperature is maintained from about 80° C. to the solution boiling point, and the reaction is conducted for a time of from about 2 to about 12 hours.

4,341,743
SIMULTANEOUS OXIDATION AND EXTRACTION OF VANADIUM FROM WET-PROCESS PHOSPHORIC ACID

Frederick N. Tebbe, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 29, 1980, Ser. No. 220,822
Int. Cl.[3] C01G *31/00*
U.S. Cl. 423—63 2 Claims

1. In a extraction process for recovering vanadium values from wet-process phosphoric acid solution wherein vanadium in the solution is oxidized to vanadium (V) and thereafter extracted from the solution by contact with a DEPA-TOPO or DOPPA-TOPO water immiscible organic phase, the improvement which comprises combining the vanadium oxidation and extraction steps by adding sufficient oxidant to the phosphoric acid solution to convert vanadium to the vanadium (V) oxidation state and simultaneously extracting the vanadium values.

4,341,744
SODA ASH PRODUCTION

Robert J. Brison, Arvada, Colo., and Michael E. Webber, Martinez, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 5,644, Jan. 22, 1979, abandoned. This application Nov. 16, 1979, Ser. No. 95,035
Int. Cl.[3] C22B *26/10*; B03C *7/00, 1/00*; C01D *31/24*
U.S. Cl. 423—206 T 10 Claims

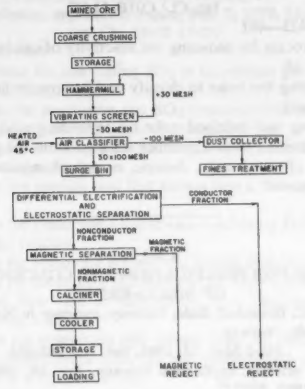
1. A process for the production of soda ash from trona ore which comprises

(a) reducing the ore particle size to a maximum of about 4.0 millimeters in diameter,

(b) removing fines from the ore to produce a minimum particle size of about 0.1 millimeter in diameter,

(c) differentially electrifying the ore particles according to differences in conductance,

(d) segregating the ore particles by electrostatic separation into at least two fractions according to the differences in electrical charge resulting from the electrification of step (c), and



(e) calcining the fraction of least conductance to convert the trona contained therein to soda ash,

steps (a) through (d) occurring at a temperature not to exceed about 100° C.

4,341,745

PROCESS FOR ELIMINATING ACIDIC COMPONENTS FROM WASTE GASES

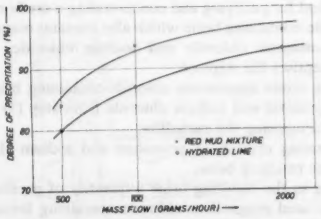
Hans Zopff, Ratekau, and Hans-Ekkehard Müller, Hamburg, both of Fed. Rep. of Germany, assignors to Kommanditgesellschaft "ALBERTA" Chemische Fabrik GmbH & Co., Hamburg, Fed. Rep. of Germany

Filed Jul. 18, 1980, Ser. No. 170,063

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931169

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—210 **6 Claims**



1. Process for eliminating acidic components from waste gases by means of finely particulate basic adsorbents introduced into the waste gas stream, characterised in that the adsorbent used is a direct reaction product of a mixture of red mud, an iron rich residue from the purifying of bauxite by the Bayer process, and an alkaline earth metal hydroxide or aluminium hydroxide, which reaction product has been prepared by reacting alkaline earth metal oxides or aluminium oxide with stoichiometric quantities of water in the presence of red mud.

4,341,746

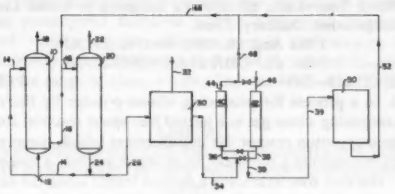
REMOVAL OF DEGRADATION PRODUCT FROM GAS TREATING SOLUTION

Jan A. Sarsten, Millington; Fred J. Heinzelmann, Fanwood, and Ferdinand C. Cataneo, Randolph, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 1, 1981, Ser. No. 269,258

Int. Cl.³ B01D *53/34, 9/02*

U.S. Cl. 423—228 **12 Claims**



1. A method for at least partially removing cyclic urea from a solution containing the cyclic urea comprising the steps of:

a. passing the solution containing the cyclic urea into a vacuum crystallization zone and cooling the entering solution at a rate of at least 4.6° C. per minute to thereby crystallize at least a portion of the cyclic urea in the solution; and

b. passing the solution containing the crystallized cyclic urea from the crystallization zone to a separation zone wherein at least a portion of the cyclic urea crystals are separated from the solution.

4,341,747

PROCESS OF REMOVING NITROGEN OXIDES FROM GASEOUS MIXTURES

Gale D. Downey, Pennington, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Aug. 15, 1978, Ser. No. 933,694

Int. Cl.³ C01B *21/40*

U.S. Cl. 423—235 **3 Claims**

1. A process of removing nitrogen oxides from a gaseous mixture comprising contacting the mixture with an aqueous solution of nitric acid having a concentration by weight of from about 35% to about 58% and containing by weight at least 0.001% of hydrogen peroxide whereby the said nitrogen oxides are converted to nitric acid.

4,341,748

METHOD FOR PRODUCING ZEOLITES

Charles J. Plank, Woodbury; Edward J. Rosinski, Pedricktown, both of N.J., and Mae K. Rubin, Bala Cynwyd, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 23,117, Mar. 23, 1979, which is a continuation-in-part of Ser. No. 841,622, Oct. 13, 1977, Pat. No. 4,175,114, which is a continuation-in-part of Ser. No. 650,481, Jan. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 424,481, Dec. 13, 1973, abandoned. This application Jul. 15, 1980, Ser. No. 169,005

The portion of the term of this patent subsequent to Nov. 20, 1996, has been disclaimed.

Int. Cl.³ C01B *33/28*

U.S. Cl. 423—328 **1 Claim**

1. An uncalcined zeolite having the characteristic X-ray

diffraction pattern of zeolite ZSM-5 having a nitrogen content of no more than 0.2 wt. %, substantially free of organic nitrogen and being capable of substantially complete ion exchange of its original metal cations without prior calcination.

4,341,749

HEATING METHOD FOR SILANE PYROLYSIS REACTOR

Sridhar K. Iya, Williamsville; Richard A. Van Slooten, East Aurora; Mark E. Braaten, Tonawanda, and James R. Lay, North Tonawanda, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 14, 1981, Ser. No. 292,426
Int. Cl.³ C01B *23/02*; C30B *25/10*
U.S. Cl. 423—349 **3 Claims**

1. In a process for producing silicon powder by thermally decomposing silane gas in a heated free-space reaction zone of a decomposition reactor the improvement which comprises

(i) introducing a turbulent jet of silane gas into a free-space reaction zone extending a desired length along the central axis of a substantially cylindrical decomposition reactor surrounding said free-space reaction zone, said jet of silane gas being introduced along the central axis of said reactor into said free-space reaction zone,

(ii) applying heat circumferentially to the outer wall of the decomposition reactor surrounding the reaction zone, said heat being sufficient to establish a temperature in said reaction zone sufficient to decompose silane to provide silicon and hydrogen gas, the applied heat being a maximum at the circumferential location surrounding the introducing of the jet of silane into said reaction zone and decreasing substantially linearly along the length of the reaction zone with the heat applied circumferentially at the end of the reaction zone being about 30 to 50% of the maximum applied heat.

4,341,750

CARBON BLACK PRODUCTION

John W. Vanderveen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 20, 1977, Ser. No. 808,002
Int. Cl.³ C01B *31/02*; C09C *1/48*
U.S. Cl. 423—450 **17 Claims**

1. In a process for producing carbon black by introducing a carbonaceous feed material, air, fuel and a quench fluid into a reactor, combusting at least a portion of the fuel with a portion of the air to heat the feed to a temperature sufficiently high to decompose the feed to produce a carbon black effluent, cooling the effluent with the quench fluid, removing the carbon black effluent from the reactor, and collecting the carbon black thus produced, wherein operating conditions include the rates at which the carbonaceous feed material, air, fuel and quench fluid are introduced; the positions from which the carbonaceous feed material, air, fuel and quench fluid are introduced; the characteristics of the carbonaceous feed material, air, fuel and quench fluid and the pressure and temperature at which the reactor is operated; the improvement which comprises:

(a) varying said operating conditions from a first set of conditions which produce a carbon black having a first tint value to a second set of conditions which produces a carbon black having a second tint value by varying at least one of said operating conditions, and

(b) repeating step (a) at an intervallic interval in the range of from about 2 seconds to about 15 minutes, the frequency of repetition being sufficiently high so that the collected carbon black has a substantially constant tint residue, and the amount by which said set of operating conditions is varied being sufficiently large so that the collected carbon black has a tint residue of less than about −6.

4,341,751

REDUCING CARBOXY REACTIVITY IN COKE

Oliver A. Kiikka, Willoughby, Ohio, and Keith A. Connors, Moundsville, W. Va., assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 221,184, Dec. 30, 1980, abandoned. This application Aug. 5, 1981, Ser. No. 290,039
Int. Cl.³ C01B *31/02*
U.S. Cl. 423—461 **8 Claims**

1. A process for reducing the reactivity of calcined coke by the steps of:

(a) calcining the coke to densify and remove volatiles therefrom; and

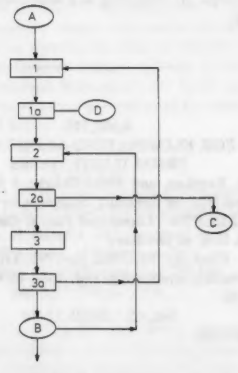
(b) cooling said calcined coke by contacting said coke with water treated with a member selected from the group consisting of monomeric, dimeric, or polyphosphate acids and salts thereof.

4,341,752

METHOD FOR PURIFICATION AND CONCENTRATION OF $MGCL_2$-BRINES

Hendrik C. Groenhof, Oslo, Norway, assignor to Norsk Hydro a.s., Oslo, Norway

Filed Mar. 13, 1981, Ser. No. 243,453
Claims priority, application Norway, Apr. 18, 1980, 801137; Jun. 11, 1980, 801737
Int. Cl.³ C01D *3/06*
U.S. Cl. 423—497 **5 Claims**



1. A method for purifying and concentrating a crude magnesium chloride-containing brine which also contains magnesium sulphate, potassium chloride and sodium chloride, which method comprises the steps of:

(1) mixing crude magnesium chloride-containing brine (A) with carnallite and sodium chloride from step (3) below and decomposing the carnallite;

(1a) separating crystals of potassium and sodium chloride from the resulting brine;

(2) adding to the resulting brine a quantity of purified and concentrated magnesium chloride-containing brine from step (3) below and evaporating the brine to cause sodium chloride and kieserite crystals to form;

(2a) separating the thus produced sodium chloride and kieserite crystals from the brine to obtain a solution;

(3) Cooling the solution to cause sodium chloride and carnallite crystals to form;

(3a) separating the resulting sodium chloride and carnallite from the solution and feeding the sodium chloride and carnallite to step (1) above and feeding a portion of the purified and concentrated magnesium chloride-containing brine product to step (2).

4,341,753
METHOD AND APPARATUS FOR CONVERTING SULFUR DIOXIDE IN GAS TO SULFUR

Toshikatsu Mori; Teruo Kumagai, both of Hitachi; Shimpei Matsuda, Tokai, and Fumito Nakajima, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Babcock-Hitachi Kabushiki Kaisha, both of Tokyo, Japan

Filed Sep. 8, 1980, Ser. No. 184,759
Claims priority, application Japan, Sep. 7, 1979, 54/115531
Int. Cl.³ C01B *17/04*
U.S. Cl. 423—569 **3 Claims**

2. Apparatus for converting SO_2 in an exhaust gas containing SO_2 to S comprising:

(a) means for measuring the SO_2 concentration in the exhaust gas stream and generating a signal;

(b) means for dividing the exhaust gas stream into a first and a second stream;

(c) means for passing said first stream into a reduction reactor;

(d) means for removing a gas stream containing H_2S, S, SO_2 from the reactor;

(e) means for removing S from said stream from the reactor;

(f) means for measuring the SO_2 and the H_2S concentration and the flow rate of said stream from the reactor and generating a signal;

(g) means for combining said stream from the reactor with said second stream from (b) and passing said combined stream to a Claus reactor;

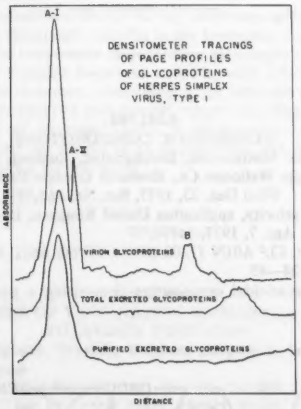
(h) means for removing S from the product gas of said Claus reactor; and

(i) means for controlling the flow of gas in said second stream based on signals generated by (a) and (f) above to maintain the ratio of H_2S to SO_2 in the feed to the Claus reactor at 2.

4,341,754
DIAGNOSTIC REAGENT FOR HERPES SIMPLEX VIRUS ENCEPHALITIS

Albert S. Kaplan; Tamar B. Kaplan, both of Nashville, Tenn., and Anthony B. Chen, Milpitas, Calif., assignors to Vanderbilt University, Nashville, Tenn.

Filed Jan. 24, 1980, Ser. No. 114,739
Int. Cl.³ A61K *43/00;* **G01N** *33/56, 33/60*
U.S. Cl. 424—1 **2 Claims**



1. A cerebrospinal fluid diagnostic reagent for herpes simplex virus encephalitis, consisting essentially of the glycoprotein derived from Type 1 herpes simplex virus (HSV-1) having an approximate molecular weight of 132,000 and being antigenically reactive with HSV-1 antiserum, said reactive glycoprotein being in a radiolabeled form for radioimmunoassay use and comprising at least 50% by weight of the total radiolabeled protein present in said reagent.

4,341,755
PARATHYROID RADIOIMMUNOASSAY

Arnold W. Lindall, Marine on St. Croix, Minn., assignor to Immuno Nuclear Corporation, Stillwater, Minn.

Filed Jul. 15, 1980, Ser. No. 169,492
Int. Cl.³ 424 *12;* **G01N** *33/56*
U.S. Cl. 424—1 **119 Claims**

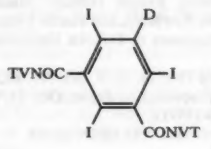
1. A method of double antibody radioimmunoassay measurement of the concentration in biological or other fluids of mammalian parathyroid hormone and/or C-terminal fragments thereof which comprises incorporating in the assay as the radioactively labeled peptide a radioactively labeled fragment within the range of about 65–84 of bovine PTH or hPTH.

4,341,756
NOVEL AMINO-DIOXEPANE INTERMEDIATES FOR THE SYNTHESIS OF NEW NON-IONIC CONTRAST MEDIA

Milos Sovak, La Jolla, and Ramachandran Ranganathan, San Diego, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 117,151, Jan. 31, 1980, abandoned. This application Apr. 17, 1980, Ser. No. 141,097
Int. Cl.³ A61K *29/02;* **C07C** *103/78*
U.S. Cl. 424—5 **31 Claims**

1. A compound of the formula:



wherein:

D is —CONVT or NVCOE;

T is trihydroxybutyl;

V is hydrogen or lower alkyl of from 1 to 2 carbon atoms;

E is hydrogen, an alkyl group of from one to three carbon atoms having from zero to two oxy groups, which oxy groups are hydroxyl or ether groups of from one to two carbon atoms or two Es may be taken together to provide a linking group which may be a bond or an alkylene group of from one to four carbon atoms having from zero to four oxy groups, which oxy groups are hydroxy or alkoxy of from one to two carbon atoms.

4,341,757
STABLE ISOTOPIC IMMUNOASSAY METHOD EMPLOYING NON-RADIOACTIVE SELENIUM LABEL

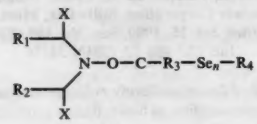
Julian E. Spallholz, Lubbock, Tex., assignor to Nutrition 21, San Diego, Calif.

Filed Sep. 2, 1980, Ser. No. 183,467
Int. Cl.³ G01N *33/52, 33/54*
U.S. Cl. 424—8 **12 Claims**

1. In a competitive immunoassay wherein at least one standard solution and at least one unknown solution of a reactive biological compound are admixed with known quantities of tracer labelled reactive biological compound and a conjugating compound which forms a complex with said reactive biological compound, the resultant mixtures are incubated and said solutions are treated to remove unreacted quantities of reactive biological compound and are analyzed for their contents of labelled and unlabelled complexes, the improvement which comprises the use of a non-radioactive selenium labelled binding compound as said tracer labelled reactive biological

compound and analyzing for selenium in the complexes which are obtained by atomic adsorption or fluorometric analyses.

7. The immunoassay of claim 2 wherein said selenium binding compoound is a conjugate of an antigen, hapten or antibody with a selenium compound of the formula:



wherein:

X is hydrogen or oxo;

R_1 and R_2, together, are ethylene, trimethylene, or 5,6-phenylene;

R_3 is alkylene of 1 to 6 carbons;

R_4 is alkyl or isoalkyl of 1 to 6 carbons, phenyl or benzyl; or R_3 and R_4 taken together are 1,2,3-propanetriyl; and

n is 1 or 2.

4,341,758

IMMUNOCHEMICAL ASSAY REAGENT FOR THE DETERMINATION OF HAPTENS, AND ASSAY METHOD THEREWITH

Kyoichi Sakakibara, Tokyo; Hideaki Manita, Sagamihara; Masaaki Gondo, Kawasaki, and Haruo Yamashita, Kunitachi, all of Japan, assignors to Teikoku Hormone Mfg. Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1979, Ser. No. 83,938

Claims priority, application Japan, Oct. 14, 1978, 53-125710; Oct. 14, 1978, 53-125711

Int. Cl.³ G01N *33/54*

U.S. Cl. 424—12 **6 Claims**

1. An immunochemical assay reagent comprising a combination of (A-1) a carboxyl-containing water-soluble mono-olefinic polymeric compound chemically bound with a hapten or a hapten which is chemically modified to chemically bind it with said polymeric compound and (B-2) the antibody to said hapten supported on a carrier, said carrier being sensitized or chemically bound with said hapten antibody, the components of said combination being physically separated from each other until used for determining the presence of a hapten in an assay sample.

2. An immuno assay reagent comprising a combination of (A-2) a hapten-supported latex obtained by chemically combining a polymeric latex having a particle diameter of about 0.01 to about 2 microns with a carboxy-containing water-soluble mono-olefinic polymeric compound chemically bound with a hapten or a hapten which is chemically modified to bind it to said polymeric compound and (B-1) the antibody to said hapten; the components of said combination being physically separated from each other until used for determining the presence of a hapten in an assay sample.

3. An immunochemical assay reagent comprising a combination of (A-2) a hapten-supported latex obtained by chemically combining a polymeric latex having a particle diameter of about 0.01 to about 2 microns with a carboxy-containing water-soluble mono-olefinic polymeric compound chemically bound with a hapten or a hapten which is chemically modified to bind it to said polymeric compound and (B-2) the antibody to said hapten supported on a carrier, said carrier being sensitized or chemically bound with said hapten antibody; the components of said combination being physically separated from each other until used for determining the presence of a hapten in an assay sample.

4,341,759

GRANULE HAVING CONTROLLED RELEASE PROPERTIES

Conny B. Bogentoft, Mölndal, and Curt H. Appelgren, Frölunda, both of Sweden, assignors to Aktiebolaget Hässle, Mölndal, Sweden

Division of Ser. No. 13,124, Feb. 21, 1979, Pat. No. 4,289,795, which is a continuation of Ser. No. 742,283, Nov. 16, 1976, abandoned. This application Oct. 27, 1980, Ser. No. 200,998

Claims priority, application Sweden, Nov. 17, 1975, 7512883

Int. Cl.³ A61K *9/24, 9/32, 9/36, 9/42*

U.S. Cl. 424—21 **13 Claims**

1. In a granule having a pharmaceutically active material and at least one pharmaceutically inactive release controlling component, said granule having a core and an outer layer, said pharmaceutically active material and pharmaceutically inactive release controlling component being present in said outer layer, the improvement wherein said outer layer is a unitary layer in which the concentration of said active component decreases in a direction from the core to the surface of said granule said granule having a finished size of 0.3–2 mm being prepared in accordance with the process for producing a preparation comprising a plurality of granules each having a core and a unitary layer thereon containing at least one pharmaceutically active material which, on disintegration, releases said pharmaceutically active material at a controlled rate, comprising applying to said cores in a continuous coating operation a solution or suspension containing at least one active compound and at least one pharmaceutically inactive release controlling substance over a period of time sufficient to cause said unitary layer of said active ingredient and inactive release controlling substance to form on each core to give granules of size 0.3–2 mm, during said time period the concentration of active ingredient being decreased in the solution or suspension from which the layer is formed by adding additional release controlling substances to the solution or suspension, whereby there results granules each having a layer containing an active ingredient in which layer the concentration of active ingredient decreases radially outwardly from the core to the outer surface of said layer.

4,341,760

SYNERGISTIC COMPOSITIONS

Michael D. Matthewson, Berkhamsted, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

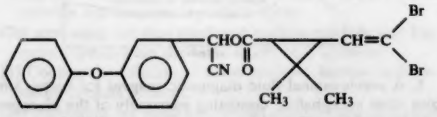
Filed Dec. 23, 1977, Ser. No. 863,737

Claims priority, application United Kingdom, Dec. 24, 1976, 54049/76; Apr. 7, 1977, 14770/77

Int. Cl.³ A01N *37/00, 37/34, 57/00;* **A61L** *9/04*

U.S. Cl. 424—45 **17 Claims**

1. An acaricidal composition comprising a pyrethroid of formula



together with at least one acaricidal organophosphorus compound wherein the ratio of said pyrethroid to said organophosphorus compound is in the range of from about 1:1 to 1:20.

4,341,761

ANTIBODIES TO IMMUNOGENIC PEPTIDES AND THEIR USE TO PURIFY HUMAN FIBROBLAST INTERFERON

David J. Ganfield, Clementon, N.J.; Michael W. Hunkapiller, San Gabriel, Calif.; Ernest Knight, Jr., and Bruce D. Korant, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 25, 1980, Ser. No. 172,466
Int. Cl.[3] A61K *39/00, 45/02*
U.S. Cl. 424—85 13 Claims

1. Antibodies to human fibroblast interferon produced in response to an immunogenic peptide comprising the following amino acid sequence:

$$(X\text{-Ser-Tyr-Asn-Leu-Leu-Gly-Phe-Leu-Gln-Arg-Ser-Ser-Asn-Phe-Gln-Y-Gln-Lys-Leu-Leu})_n$$

wherein:

X is selected from Met and Ser,

Y is selected from His and Cys, and

n is 1 to 12.

9. A process for producing antibodies, comprising introducing a peptide having 21 amino acid units into an animal medium capable of producing antibodies in response to human fibroblast interferon, said antibodies produced in response to said peptide characterized by being antibodies to human fibroblast interferon, said peptide having the amino acid sequence:

$$(X\text{-Ser-Tyr-Asn-Leu-Leu-Gly-Phe-Leu-Gln-Arg-Ser-Ser-Asn-Phe-Gln-Y-Gln-Lys-Leu-Leu})_n$$

wherein:

X is selected from Met and Ser,

Y is selected from His and Cys, and

n is 1 to 12.

4,341,762

USE OF SNAKE VENOMS FOR TREATMENT OF NEUROLOGICAL AND RELATED DISORDERS

William E. Haast, 12655 S. Dixie Hwy., Miami, Fla. 33156

Filed Apr. 7, 1981, Ser. No. 251,745
Int. Cl.[3] A61K *39/00, 35/58*
U.S. Cl. 424—88 40 Claims

4. A composition of matter having pharmacological activity and having therapeutic benefits in the treatment of the symptomology of progressive degenerative neurological diseases, the disease complex known as arthritis, viral infections and autoimmune disorders, comprising in an administrable form effective amounts of a post-synaptic neurotoxin obtained from the venom of an elapid snake, a pre-synaptic neurotoxin obtained from the venom of an elapid snake, and the venom obtained from a viperid snake.

4,341,763

METHODS OF VACCINATING HUMANS AGAINST ROTAVIRUS INFECTION

Nathan Zygraich, Brussels, Belgium, assignor to SmithKline-Rit, Belgium

Filed Mar. 10, 1981, Ser. No. 242,495
Int. Cl.[3] A61K *39/15, 39/225, 39/42*
U.S. Cl. 424—89 14 Claims

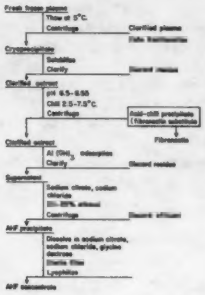
1. A method of vaccinating human beings against human rotavirus infection comprising administering by intramuscular, oral or nasal route to said human beings at least one dose of a live vaccine comprising from about 10^4 to about 10^8 $TCID_{50}$ of an attenuated bovine rotavirus.

4,341,764

METHOD OF PREPARING FIBRONECTIN AND ANTIHEMOPHILIC FACTOR

Donald G. Wallace, Albany; Phillip M. Schneider, Alameda, and John L. Lundblad, El Cerrito, all of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Mar. 5, 1980, Ser. No. 127,340
Int. Cl.[3] A61K *35/14*
U.S. Cl. 424—101 25 Claims



1. A method for preparing fibronectin and antihemophilic factor from blood plasma, which comprises

(a) isolating a blood plasma fraction containing fibronectin and antihemophilic factor from blood plasma,

(b) forming a solution of said blood plasma fraction in an aqueous medium,

(c) acidifying and chilling the solution of Step b to a pH and a temperature sufficient to form an acid-chill precipitate containing a major proportion of the fibronectin of said blood plasma fraction and said solution containing a major proportion of the antihemophilic factor of said blood plasma fraction,

(d) isolating fibronectin from the precipitate of Step c, and

(e) isolating antihemophilic factor from the solution of Step c, said antihemophilic factor being obtained in yields corresponding to those obtained in conventional antihemophilic factor production.

4,341,765

DRUG FOR ENHANCING LIVER GROWTH AND METHOD OF PREPARING SAME

Gerhard Ruhenstroth-Bauer, Gräfelfing; Michel Goldberg; Siegfried Silz, both of Munich, and Wolfgang Strecker, Eichenau, all of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften E.V., Fed. Rep. of Germany

Continuation of Ser. No. 28,304, Apr. 9, 1979, abandoned, which is a continuation-in-part of Ser. No. 973,666, Dec. 27, 1978, abandoned. This application Mar. 17, 1980, Ser. No. 130,648
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2814981
Int. Cl.[3] A61K *35/14, 37/00, 35/407;* C07G *7/00*
U.S. Cl. 424—101 8 Claims

1. A factor for stimulating the rate of proliferation of liver cells isolated by a process comprising the steps of, providing remaining livers from partially hepatectomized animals, homogenizing said remaining livers to provide a liver homogenate, acidifying said liver homogenate to a pH value of approximately 5.5, heat denaturing said acidified liver homogenate to a temperature of approximately 95° Centigrade, subsequently centrifuging said liver homogenate to provide a supernatant containing said factor, said factor exhibiting the characteristics of a neuraminic acid-free protein or proteide having a molecular weight of approximately 30,000 to 50,000 D which is stable

at a pH level of 5.5 or greater and at a temperature of 95° Centigrade or lower.

5. A pharmaceutical composition containing the factor of claim 1 in a therapeutically effective amount and a pharmaceutically acceptable carrier therefor.

4,341,766

DEACTIVATION OF ANTIBIOTIC-HYDROLYZING ENZYMES

Jed F. Fisher, Somerville, and Jeremy R. Knowles, Cambridge, both of Mass., assignors to Harvard College, Cambridge, Mass.

Continuation of Ser. No. 26,456, Apr. 2, 1979, abandoned. This application Jun. 27, 1980, Ser. No. 163,524

Int. Cl.³ A61K *35/00, 31/43*

U.S. Cl. 424—114 **1 Claim**

1. A therapeutic mixture comprising penicillin and quinacillin sulfone in relative amounts from 1:100 to 100:1 by weight.

4,341,767

NONAPEPTIDE AND DECAPEPTIDE ANALOGS OF LHRH, USEFUL AS LHRH ANTAGONISTS

John J. Nestor, San Jose; Gordon H. Jones, and Brian H. Vickery, both of Cupertino, all of Calif., assignors to Syntex Inc., Palo Alto, Calif.

Filed Oct. 6, 1980, Ser. No. 194,180

The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.

Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **21 Claims**

1. A compound of the formula:

A-B-C-Ser-Tyr-X-Leu-Arg-Pro-E (I)

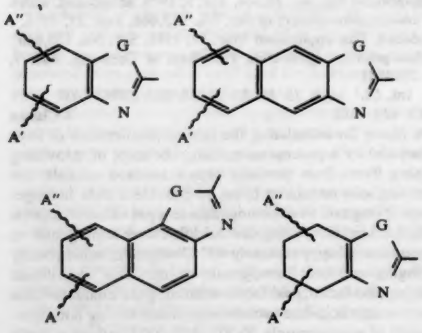
and the pharmaceutically acceptable salts thereof, wherein:

X is a D-alanyl residue wherein one hydrogen on C-3 is replaced by:

(a) a carbocyclic aryl-containing radical selected from the group consisting of phenyl substituted with three or more straight chain lower alkyl groups, naphthyl, anthryl, fluorenyl, phenanthryl, biphenylyl and benzhydryl; or

(b) a saturated carbocyclic radical selected from the group consisting of cyclohexyl substituted with three or more straight chain lower alkyl groups, perhydronaphthyl, perhydrobiphenylyl, perhydro-2,2-diphenylmethyl, and adamantyl; or

(c) a heterocyclic aryl containing radical selected from the group consisting of radicals represented by the following structural formulas:



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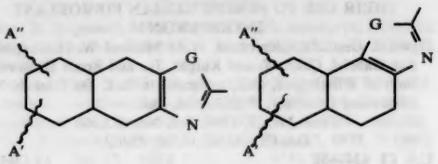


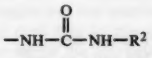
wherein A" and A' are independently selected from the group consisting of hydrogen, lower alkyl, chlorine, and bromine, and G is selected from the group consisting of oxygen, nitrogen, and sulfur;

A is an aminoacyl residue selected from the group consisting of L-pyroglutamyl, D-pyroglutamyl, N-acyl-L-prolyl, N-acyl-D-prolyl, N-acyl-D-tryptophanyl, N-acyl-D-phenylalanyl, N-acyl-D-p-halophenylalanyl, and N-acyl-X, wherein X is as defined previously;

B is an amino acyl residue selected from the group consisting of D-phenylalanyl, D-p-halophenylalanyl, 2,2-diphenylglycyl, and X wherein X is as defined previously;

C is an amino acyl residue selected from the group consisting of L-tryptophanyl, D-tryptophanyl, D-phenylalanyl and X wherein X is as defined above;

E is glycinamide or —NH—R^1, wherein R^1 is lower alkyl, cycloalkyl, fluoro lower alkyl or



wherein R^2 is hydrogen or lower alkyl.

4,341,768

ANTIBIOTIC COMPOUNDS

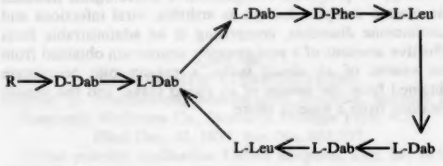
Masataka Konishi; Takeo Miyaki, both of Yokohama; Hiroshi Tsukiura, and Hiroshi Kawaguchi, Tokyo, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

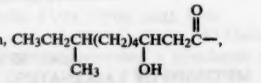
Filed Apr. 3, 1981, Ser. No. 250,987

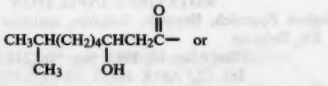
Int. Cl.³ A61K *37/00;* **C07C** *103/52;* **A61K** *35/00*

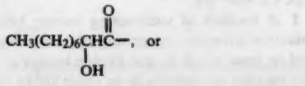
U.S. Cl. 424—177 **14 Claims**

1. A peptide antibiotic compound of the formula



wherein R is hydrogen,  ,





a pharmaceutically acceptable acid addition salt thereof,

wherein Dab represents α,γ-diaminobutyric acid, Leu represents leucine and Phe represents phenylalanine.

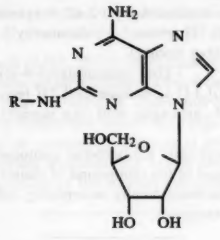
4,341,769

2,6-DIAMINONEBULARINES, THEIR PRODUCTION AND USE

Ryuji Marumoto, Ashiya; Shunsuke Shima, Minoo, and Masao Tanabe, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

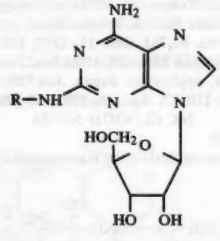
Filed Apr. 2, 1981, Ser. No. 250,297
Claims priority, application Japan, Apr. 14, 1980, 55-49432
Int. Cl.³ A61K *31/70*; C07H *19/16*
U.S. Cl. 424—180 **10 Claims**

1. A compound of the formula:



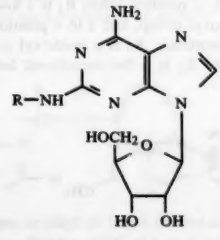
wherein R is 2-pyridyl or 3-pyridyl which may be substituted with lower alkyl, lower alkoxyl, amino, (mono- or di-C_{1-2} alkyl)amino and/or anillino, or an acid addition salt thereof.

9. A pharmaceutical composition which contains an effective amount for the treatment of ischemic heart diseases in mammals of a compound of the formula:



wherein R is 2-pyridyl or 3-pyridyl, which may be substituted with lower alkyl lower alkoxyl, amino, (mono- or di-C_{1-2} alkyl)amino and/or anillino, or an acid addition salt thereof, and a pharmaceutically acceptable carrier, vehicle or diluent therefor.

10. A method for the treatment of ischemic heart diseases in mammal, which comprises administering to the mammal an effective amount of a compound of the formula:



wherein R is 2-pyridyl or 3-pyridyl, which may be substituted with lower alkyl, lower alkoxyl, amino, (mono- or di-C_{1-2} alkyl)amino or/and anillino, or an acid addition salt thereof.

4,341,770

METHOD OF CONTROLLING UREAPLASMA INFECTIONS

Earl E. Ose, Greenfield, and Herbert A. Kirst, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 20, 1981, Ser. No. 255,575
Int. Cl.³ A61K *31/71, 31/70*
U.S. Cl. 424—181 **7 Claims**

1. A method for controlling Ureaplasma infections which comprises administering to an infected or susceptible animal selected from the group consisting of humans, cattle or sheep an amount effective for treating the Ureaplasma infection of a composition comprising 5-O-mycaminosyl tylonolide or a pharmaceutically acceptable acid addition salt of 5-O-mycaminosyl tylonolide and a suitable pharmaceutical vehicle.

4,341,771

METHOD OF CONTROLLING PASTEURELLA INFECTIONS

Herbert A. Kirst, Indianapolis, and Earl E. Ose, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 20, 1981, Ser. No. 255,577
Int. Cl.³ A61K *31/71, 31/70*
U.S. Cl. 424—181 **7 Claims**

1. A method for controlling Pasteurella infections which comprises administering to an infected or susceptible animal selected from cattle, sheep, pigs and fowl an amount effective for treating said Pasteurella infection of a composition comprising 5-O-mycaminosyl tylonolide or a pharmaceutically acceptable acid addition salt of 5-O-mycaminosyl tylonolide and a suitable pharmaceutical vehicle.

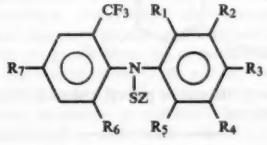
4,341,772

AGRICULTURAL PHOSPHORUS-CONTAINING SULFENAMIDES

Gary D. Grantham, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 5, 1980, Ser. No. 146,420
Int. Cl.³ A01N *57/28, 57/30, 57/32*; C07F *9/44*
U.S. Cl. 424—211 **45 Claims**

1. A compound of the formula



(I)

wherein

R_1, R_3 and R_4 are independently H, F, Cl, Br, NO_2, CF_3, $OCHF_2$, OCF_3, OCF_2CF_2H or $S(O)_kR_8$; or R_3 and R_4 may be taken together to form $—OCF_2O—$ or $—OCF_2OCF_2—$;

R_2 is H, F, Cl, Br, NO_2, CF_3 or $S(O)_kR_8$;

R_5 is H, Cl, F, Br or NO_2;

R_6 is H, NO_2 or CF_3;

R_7 is NO_2 or CF_3; k is 0, 1 or 2;

R_8 is C_1–C_2 alkyl optionally substituted with 2–4 Cl and/or F;

Z=

X is O or S;

Y_1 or Y_2 are independently: C_1–C_4 alkyl optionally substituted with one or more F, Cl, Br or I, OCH_3, OCH_2CH_3, CN, CH_3S, CH_3CH_2S; C_2–C_4 alkenyl optionally substituted with one or more of F or Cl; C_1–C_4 alkoxy, optionally substituted with one to three atoms of F, Cl, Br, CH_3O, CH_3CH_2O or combinations thereof; C_1–C_4 thioalkyl optionally substituted with one to three atoms of F, Cl, Br, I, or combinations thereof;

provided that

(1) at least two of R_1, R_2, R_3, R_4 and R_5 are hydrogen;

(2) no more than two of the substituents R_1, R_2, R_3 and R_4 are simultaneously NO_2 or CF_3;

(3) when two NO_2 or two $S(O)_kR_8$ groups are present, they are not ortho to one another;

(4) R_6 and R_7 are not simultaneously CF_3; and

(5) further provided that when R_6 is NO_2, then

(a) R_1 is H, F or Cl when R_3 is other than H, F or Cl;

(b) when $R_1=R_3=R_5$, then R_1, R_3 and R_5 are either H or F; and

(c) R_5 is either H or F.

29. A method for control of mites, insects, fungus, mite eggs or insect eggs which comprises applying to a locus to be protected a miticidally, insecticidally, fungicidally or ovicidally effective amount of a compound of claim 1.

4,341,773

2,4-DIAMINO-5-SULFAMOYLBENZENE SULFONIC ACIDS AND PROCESS FOR THEIR MANUFACTURE

Karl Sturm, Heidesheim, and Roman Muschaweck, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

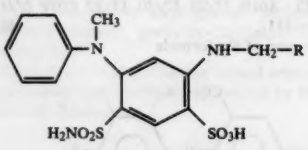
Filed Mar. 9, 1981, Ser. No. 241,666

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1980, 3009229

Int. Cl.³ A61K *31/63, 31/625;* **C07D** *231/42;* **C07C** *143/78*

U.S. Cl. 424—229 **4 Claims**

1. Compounds of the formula I



wherein R is furyl, thienyl or phenyl and physiologically acceptable salts thereof.

4,341,774

METHOD FOR SUPPRESSING ABNORMAL RISE IN IMMUNOLOGICAL FUNCTION AND AGENT USEFUL THEREFOR

Takao Aoki; Hideo Miyakoshi; Yoshihei Hirasawa, all of Niigata, and Yasuo Nishii, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 176,642

Claims priority, application Japan, Aug. 10, 1979, 54-101211

Int. Cl.³ A01N *45/00*

U.S. Cl. 424—236 **7 Claims**

1. A method for immunosuppression in humans which comprises administering cholecalciferol and/or its derivative to a human in need of immunosuppression, in an amount sufficient to suppress abnormal rise in immunological function.

4,341,775

CEPHEM COMPOUNDS

Takao Takaya, Kawanishi; Takashi Masugi, Toyonaka; Hisashi Takasugi, Kohamanishi, and Hiromu Kochi, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 941,660, Sep. 12, 1978, Pat. No. 4,220,761. This application Aug. 30, 1979, Ser. No. 71,302

Claims priority, application United Kingdom, Sep. 11, 1978, 36399/78; Mar. 13, 1979, 7908799; Mar. 26, 1979, 7910499

Int. Cl.³ C07L *501/56*

U.S. Cl. 424—246 **3 Claims**

1. 7-[2-(2-aminothiazol-4-yl)-2-allyloxyiminoacetamido]-3-[1-(2-aminoethyl)-1H-tetrazol-5-ylthiomethyl]-3-cephem-4-carboxylic acid (syn isomer).

2. 7-[2-(2-aminothiazol-4-yl)-2-propargyloxyiminoacetamido]-3-[1-(2-aminoethyl)-1H-tetrazol-5-ylthiomethyl]-3-cephem-4-carboxylic acid (syn isomer), or its dihydrochloride.

3. A pharmaceutically antibacterial composition comprising an effective amount of the compound of claims 1 or 2 in association with a pharmaceutically acceptable, substantially nontoxic carrier or excipient.

4,341,776

CEPHALOSPORIN DERIVATIVES

Nobuhiro Oi, Hoya; Bunya Aoki, Tama; Teizo Shinozaki, Matsudo; Kanji Moro, Kuki; Isao Matsunaga, Tokyo; Takao Noto, Machida; Toshiyuki Nebashi, Kawagoe; Yusuke Harada, Tokyo; Hisao Endo, Yokohama; Takao Kimura, Chiba; Hiroshi Okazaki, Sayama; Haruki Ogawa, Chofu, and Minoru Shindo, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

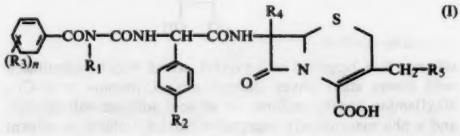
Division of Ser. No. 47,781, Jun. 11, 1979, Pat. No. 4,298,605. This application Mar. 28, 1980, Ser. No. 136,061

Claims priority, application Japan, Jun. 22, 1978, 53-74868; Sep. 11, 1978, 53-110627; Apr. 26, 1979, 54-50841

Int. Cl.³ C07D *501/36*

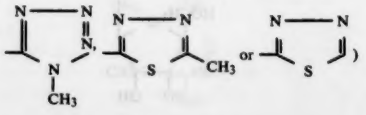
U.S. Cl. 424—246 **5 Claims**

1. A cephalosporin derivative represented by the formula



(I)

wherein R_1 is a hydrogen atom or a lower alkyl group, R_2 is a hydrogen atom; R_3 is a hydroxyl group or a lower alkanoyloxyl group; n is 2 or 3; at least two of R_3 are bonded to adjacent carbon atoms, the position of substituent R_3 being selected from 3 to 5 position when R_1 is a lower alkyl group and R_3 is a hydroxyl group, and 2 to 6 position when R_1 and R_3 are other substituents; R_4 is a methoxyl group; and R_5 is —S—R_6 (wherein R_6 is a five-membered heterocyclic ring selected from



or a pharmaceutically acceptable salt thereof.

4,341,777

CEPHALOSPORIN ANTIBIOTIC

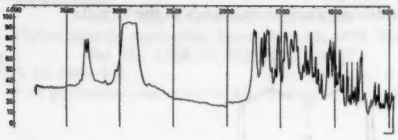
Herbert J. White, Chalfont St. Giles, England, assignor to Glaxo Group Limited, London, England

Filed Sep. 5, 1980, Ser. No. 184,383

Claims priority, application United Kingdom, Sep. 10, 1979, 7931379

Int. Cl.[3] A61K *31/545;* C07D *501/34*

U.S. Cl. 424—246 12 Claims



1. A sodium salt of (6R,7R)-3-acetoxymethyl-7-[(Z)-2-(fur-2-yl)-2-methoxyiminoacetamido]ceph-3-em-4-carboxylic acid containing less than 1% m/m of water and being non-hygroscopic at relative humidities within the range 25–83%.

12. A method of combatting a bacterial infection in an animal which comprises administering to said animal a therapeutically effective amount of the sodium salt claimed in claim 1.

4,341,778

3,1 BENZOXAZIN-2-ONES AND USE THEREOF

Anton Mentrup, Mainz-Kastel; Kurt Schromm; Ernst-Otto Renth, both of Ingelheim; Wolfgang Hoefke, Wiesbaden; Wolfram Gaida, Ingelheim; Ilse Streller, Stromberg, and Armin Fügner, Gau-Algesheim, all of Fed. Rep. of Germany, assignors to C. H. Boehringer Sohn, Ingelheim, Fed. Rep. of Germany

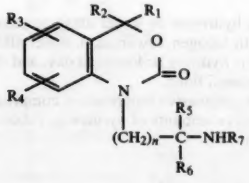
Filed Jul. 6, 1981, Ser. No. 280,349

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1980, 3026534

Int. Cl.[3] A61K *43/86;* C07D *265/18*

U.S. Cl. 424—248.5 5 Claims

1. A compound of the formula



wherein

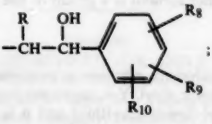
R_1 and R_2 are each hydrogen or alkyl of 1 to 4 carbon atoms;

R_3 and R_4 are each hydrogen, fluorine, chlorine, hydroxyl, methyl, ethyl or alkoxy of 1 to 4 carbon atoms; or

R_3 and R_4, together with each other are methylenedioxy;

R_5 and R_6 are each hydrogen or methyl;

R_7 is



;

R is hydrogen or alkyl of 1 to 4 carbon atoms;

R_8 is fluorine, chlorine, alkyl of 1 to 4 carbon atoms, (alkyl of 1 to 4 carbon atoms)thio, hydroxymethyl, —$CONHR_{11}$, —SO_2NHR_{11}, —OR_{12}, methoxycarbonyl, ethoxycarbonyl or —$NHSO_2CH_3$;

R_9 is hydrogen, fluorine, chlorine or —OR_{12};

R_{10} is hydrogen, chlorine, amino, methyl or methoxy;

R_{11} is hydrogen, methyl, ethyl or hydroxyethyl;

R_{12} is hydrogen, alkyl of 1 to 4 carbon atoms, (alkyl of 1 to 4 carbon atoms)carbonyl, aryl—CH_2— or arylcarbonyl; and

n is 1, 2 or 3;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4,341,779

ESTERS OF AMIDINEPENICILLINS

Jerzy Cieslak; Irena Busko-Oszczapowicz, and Marek Stepniak, all of Warsaw, Poland, assignors to Tarchominskie Zaklady Farmaceutyczne, Warsaw, Poland

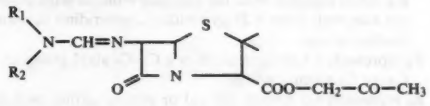
Filed Aug. 17, 1979, Ser. No. 67,278

Claims priority, application Poland, Sep. 8, 1978, 209487; Apr. 13, 1979, 214914

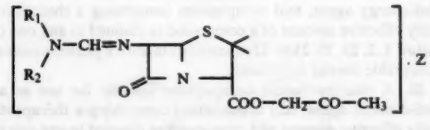
Int. Cl.[3] C07D *499/22*

U.S. Cl. 424—248.51 7 Claims

1. Acetylmethyl esters of amidinopenicillins of the formula



wherein each of R_1 and R_2, which are the same or different, is selected from the group consisting of a straight or branched chain alkyl group containing from 1 to 6 carbon atoms, which may be substituted with a radical selected from the group consisting of a cycloalkyl group containing from 5 to 7 carbon atoms; an alkenyl group containing from 3 to 6 carbon atoms; an aryl group selected from the group consisting of phenyl, benzyl, naphthyl, phenylethyl, diphenylmethyl, naphthylmethyl and cinnamyl groups; and a heterocyclic group selected from the group consisting of furyl, thienyl, pyrrolidyl, piperidyl and morpholinyl; or R_1 and R_2 together with the adjacent nitrogen atom form a heptamethyleneimine, hexamethyleneimine, piperidine, pyrrolidine or morpholine ring system, unsubstituted or substituted with an aminoalkyl or azidoalkyl group, wherein the alkyl group contains up to 4 carbon atoms; and addition salts thereof of the formula



wherein R_1 and R_2 are as defined above, and Z is a pharmaceutically acceptable organic or inorganic acid.

4,341,780

SUBSTITUTED PYRIDO [1,2-A] PYRIMIDINES USEFUL AS ANTI-ALLERGIC, ANTI-ULCER AND ANTI-DIABETIC AGENTS

Gianfederico Doria, Milan; Ciriaco Romeo, Serino; Piero Sberze, Varese; Marcellino Tibolla, Canale d'Agordo, and Maria L. Corno, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

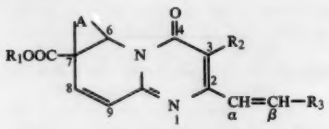
Continuation of Ser. No. 138,879, Apr. 10, 1980, Pat. No. 4,310,526. This application May 27, 1981, Ser. No. 267,450

Claims priority, application United Kingdom, May 8, 1979, 7915810

Int. Cl.[3] A61K *31/505;* C07D *471/04*

U.S. Cl. 424—248.55 29 Claims

1. Compounds having the following general formula



(1)

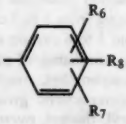
wherein A completes a bond, thereby providing a double bond between the 6- and 7-carbon atoms:

R_1 represents a hydrogen atom or a C_1–C_{12} alkyl group which is unsubstituted or substituted by a

group, wherein each of R_4 and R_5 independently represents a hydrogen atom or a C_1–C_{10} alkyl group, or R_4 and R_5, taken together with the nitrogen atom to which they are attached, form a N-pyrrolidinyl, piperidino or morpholino group;

R_2 represents a hydrogen atom or a C_1–C_6 alkyl group or a C_3- or C_4-alkenyl group;

R_3 represents (a) a furyl, thienyl or pyridyl group each of which is unsubstituted or substituted by a methyl group; or (b) a group of formula



wherein each of R_6, R_7 and R_8 independently represents a hydrogen or halogen atom, a hydroxy group, a C_1–C_4 dialkylamino group, a group —CF_3 or a group —R_9 or —OR_9, where R_9 represents a C_1–C_6 alkyl or C_3- or C_4-alkenyl group and pharmaceutically acceptable salts thereof.

24. A pharmaceutical composition suitable for use as an anti-allergy agent, said composition comprising a therapeutically effective amount of a compound as claimed in any one of claims 1, 2, 23, 20, 21 or 22 in association with a pharmaceutical acceptable carrier or diluent.

26. A pharmaceutical composition suitable for use as an anti-diabetic agent, said composition comprising a therapeutically effective amount of a compound as claimed in any one of claims 1, 2, 23, 20, 21 or 22 in association with a pharmaceutically acceptable carrier or diluent.

4,341,781

PYRIDAZOPYRIDAZINE DERIVATIVES

Cedric H. Hassall, Hatfield, and Christopher J. Moody, Stevenage, both of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

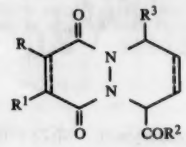
Filed Sep. 11, 1980, Ser. No. 186,237

Claims priority, application United Kingdom, Sep. 19, 1979, 7932531; Jul. 11, 1980, 8022701

Int. Cl.[3] A61K *31/50;* C07D *487/04, 237/04*

U.S. Cl. 424—250 15 Claims

1. Pyridazopyridazine compounds of the formula



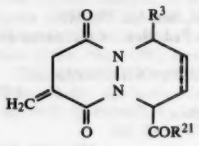
I

wherein one of the symbols R and R^1 is hydrogen or lower alkyl and the other symbol is a group of the formula

$$-(A)_n-Y \qquad \text{(i)}$$

in which A is methylene, ethylene or propylene which may be substituted by lower alkyl, Y is mercapto, lower alkanoylthio, aroylthio or aryl-(lower alkylthio) and n is zero or 1, R^2 is hydroxy, lower alkoxy or amino, R^3 is hydrogen or lower alkyl or phenyl optionally substituted with halogen, lower alkyl, lower alkoxy or trifluoromethyl, and the broken lines denote optional bonds, and salts of the acids of formula I with pharmaceutically acceptable bases.

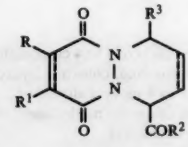
8. A compound of the formula



X

wherein R^3 is hydrogen or lower alkyl or phenyl optionally substituted with halogen, lower alkyl, lower alkoxy or trifluoromethyl, R^{21} is hydroxy or lower alkoxy, and the broken line denotes an optional bond.

10. An antihypertensive composition comprising antihypertensively-effective amounts of pyridazopyridazine compounds of the formula



I

wherein one of the symbols R and R^1 is hydrogen or lower alkyl and the other symbol is a group of the formula

$$-(A)_n-Y \qquad \text{(i)}$$

in which A is methylene, ethylene or propylene which may be substituted by lower alkyl, Y is mercapto, lower alkanoylthio, aroylthio or aryl-(lower alkylthio) and n is zero or 1, R^2 is hydroxy, lower alkoxy or amino, R^3 is hydrogen or lower alkyl or phenyl optionally substituted with halogen, lower alkyl, lower alkoxy or trifluoromethyl, and the broken lines denote optional bonds, and salts of the acids of formula I with pharma-

ceutically acceptable bases in combination with a pharmaceutically acceptable carrier material.

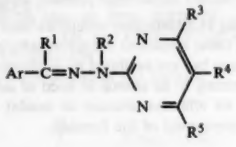
4,341,782

PYRIMIDINE DERIVATIVES AND AGRICULTURAL USES

Kazuo Konishi, Takatsuki, and Kazuho Matsuura, Kyoto, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

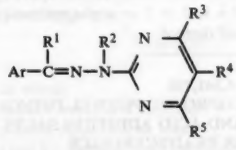
Filed May 6, 1980, Ser. No. 147,148
Claims priority, application Japan, May 15, 1979, 54-60069
Int. Cl.³ A61K *31/505*; C07D *239/42*
U.S. Cl. 424—251 **8 Claims**

1. A pyrimidine derivative of the formula:



wherein Ar is phenyl, naphthyl, phenyl having 1 to 5 substituents or naphthyl having 1 to 7 substituents, said substituents being selected from the group of lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, halogen, nitro, trifluoromethyl and di-lower alkylamino, R^1 is lower alkyl, lower cycloalkyl, trifluoromethyl, lower alkoxycarbonyl, phenyl, benzyl, or phenyl having 1 to 5 halogen substituents, R^2 is hydrogen or lower alkyl, R^3, R^4 and R^5 are hydrogen, lower alkyl, lower alkenyl or lower alkoxy, or R^3 and R^4 or R^4 and R^5 combine with each other to represent trimethylene, tetramethylene or butadienylene, or a salt thereof.

8. An antimicrobial agent for agricultural uses which contains as an active ingredient a pyrimidine derivative of the formula:



wherein Ar is phenyl, naphthyl, phenyl having 1 to 5 substituents or naphthyl having 1 to 5 substituents said substituents being selected from the group of lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, halogen, nitro, trifluoromethyl and di-lower alkylamino, R^1 is lower alkyl, lower cycloalkyl, trifluoromethyl, lower alkoxycarbonyl, phenyl, benzyl or phenyl having 1 to 5 halogen substituents, R^2 is hydrogen or lower alkyl, R^3, R^4 and R^5 are hydrogen, lower alkyl, lower alkenyl or lower alkoxy, or R^3 and R^4 or R^4 and R^5 combine with each other to represent trimethylene, tetramethylene or butadienylene, or a salt thereof, together with a suitable carrier or carriers.

4,341,783

TOPICAL USE OF DYPHYLLINE AND DYPHYLLINE CONTAINING COMPOSITIONS

Stanley Scheindlin, 3011 Nesper St., Philadelphia, Pa. 19152, assignor to Lemmon Company, Sellersville, Pa.

Filed Jul. 31, 1980, Ser. No. 174,090
Int. Cl.³ A61K *31/52*
U.S. Cl. 424—253 **4 Claims**

1. A method of treating psoriasis comprising applying directly to the psoriasis lesions an effective amount of dyphylline.

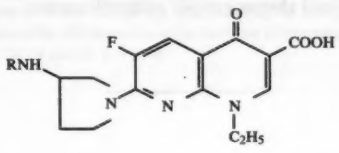
4,341,784

NAPHTHYRIDINE DERIVATIVES

Jun-ichi Matsumoto, Ikoma; Yoshiyuki Takase, Amagasaki, and Yoshiro Nishimura, Neyagawa, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan and Laboratoire Roger Bellon, Neuilly sur Seine, France

Filed Sep. 15, 1980, Ser. No. 187,081
Claims priority, application Japan, Sep. 28, 1979, 54-126223
Int. Cl.³ A61K *31/44*; C07D *471/04*
U.S. Cl. 424—256 **7 Claims**

1. A 1,8-naphthyridine compound of the formula



wherein R is hydrogen, methyl, ethyl or propyl, or a nontoxic pharmaceutically acceptable salt thereof.

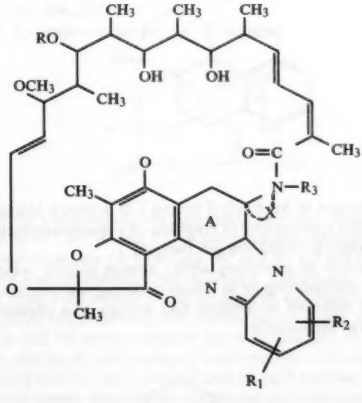
4,341,785

IMIDAZO-RIFAMYCIN DERIVATIVES WITH ANTIBACTERIAL UTILITY

Egidio Marchi, and Lauretta Montecchi, both of Casalecchio di Reno, Italy, assignors to Alfa Farmaceutici S.p.A., Bologna, Italy

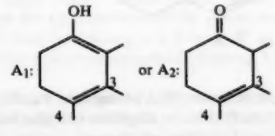
Filed May 11, 1981, Ser. No. 262,123
Claims priority, application Italy, May 22, 1980, 3429 A/80
Int. Cl.³ A61K *31/44*; C07D *491/22*
U.S. Cl. 424—256 **13 Claims**

1. A compound of formula



I

wherein:
A is



—x— is a covalent chemical bond or nil;

R is hydrogen or acetyl;

R_1 and R_2 independently represent hydrogen, (C_{1-4}) alkyl, benzyloxy, mono- and di-(C_{1-3}) alkylamino-(C_{1-4}) alkyl, (C_{1-3})alkoxy- (C_{1-4})alkyl, hydroxymethyl, hydroxy-(C_{2-4})-alkyl, nitro or R_1 and R_2 taken together with two consecutive carbon atoms of the pyridine nucleus form a benzene ring unsubstituted or substituted by one or two methyl or ethyl groups; R_3 is a hydrogen atom or nil; with the proviso that, when A is A_1, —x— is nil and R_3 is a hydrogen atom; with the further proviso that, when A is A_2, —x— is a covalent chemical bond and R_3 is nil.

10. A pharmaceutical antibacterial composition containing, as the active ingredient, an antibacterial effective amount of a compound as defined in claim 1 in admixture with one or more solid or liquid pharmaceutically acceptable carriers.

4,341,786

PHARMACEUTICAL COMPOSITIONS AND METHOD OF PRODUCING CENTRAL ALPHA$_1$ AGONIST ACTIVITY UTILIZING OCTAHYDROBENZO[F]QUINOLINE COMPOUNDS

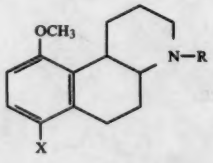
Robert M. DeMarinis, Ardmore, and Dinubhai H. Shah, Norristown, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Mar. 2, 1981, Ser. No. 239,778

Int. Cl.^{3} A61K *31/47;* C07D *221/10*

U.S. Cl. 424—258 9 Claims

1. A pharmaceutical composition in dosage unit form having alpha$_1$ agonist activity comprising a pharmaceutical carrier and an effective amount of a compound of the formula:

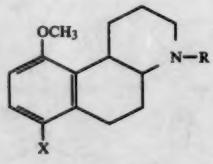


in which:

R is hydrogen or lower alkyl having 1 to 3 carbon atoms;

X is methoxy, methylthio or ethylthio; or a pharmaceutically acceptable acid addition salt thereof.

6. A method of producing alpha$_1$ agonist activity which comprises administering to an animal requiring said treatment an amount sufficient to produce said activity of a chemical compound of the formula:



in which:

R is hydrogen or lower alkyl having 1 to 3 carbon atoms;

X is methoxy, methylthio or ethylthio; or a pharmaceutically acceptable acid addition salt thereof.

4,341,787

PHARMACOLOGICALLY ACTIVE COMPOUNDS

Graham J. Durant, Welwyn Garden City; John C. Emmett, Codicote, and Charon R. Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

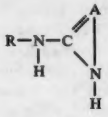
Division of Ser. No. 60,324, Jul. 25, 1979, Pat. No. 4,282,221, which is a division of Ser. No. 893,859, Apr. 6, 1978, Pat. No. 4,181,730, which is a division of Ser. No. 736,662, Oct. 29, 1976, Pat. No. 4,104,381, which is a division of Ser. No. 619,985, Oct. 6, 1975, Pat. No. 4,005,205, which is a division of Ser. No. 463,647, Apr. 24, 1974, Pat. No. 3,932,644. This application Mar. 3, 1981, Ser. No. 239,238

Claims priority, application United Kingdom, May 3, 1973, 21063/73; Jul. 26, 1973, 35551/73

Int. Cl.^{3} A61K *31/425*

U.S. Cl. 424—270 5 Claims

1. A method of inhibiting H-2 histamine receptors, said H-2 histamine receptors being those histamine receptors which are not inhibited by mepyramine but are inhibited by burimamide, which comprises administering to an animal in need of inhibition of said receptors in an effective amount to inhibit said receptors a heterocyclic compound of the formula:



wherein A taken together with the nitrogen and carbon atoms shown forms a thiazoline ring, said ring having a keto group and optionally substituted by one lower alkyl, phenyl or benzyl group; R is a grouping of the formula:

$$Het—CH_2Z(CH_2)_n—$$

wherein Het is a nitrogen containing heterocyclic ring selected from imidazole, thiazole, isothiazole or thiadiazole, said ring being optionally substituted by lower alkyl, amino, hydroxy or halogen; Z is sulphur and n is 2 or 3 or a pharmaceutically acceptable acid addition salt thereof.

4,341,788

2-(2-CHLORO-4-CYCLOPROPYL-PHENYL-IMINO)-IMIDAZOLIDINE, AND ACID ADDITION SALTS THEREOF AS BRADYCARDIACS

Helmut Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim am Rhein; Wolfgang Hoefke, Wiesbaden, all of Fed. Rep. of Germany, and Ludwig Pichler, Vienna, Austria, assignors to C. H. Boehringer Sohn, Ingelheim am Rhein, Fed. Rep. of Germany

PCT No. PCT/EP80/00081, § 371 Date Apr. 15, 1981, § 102(e) Date Apr. 15, 1981, PCT Pub. No. WO81/00565, PCT Pub. Date Mar. 5, 1981

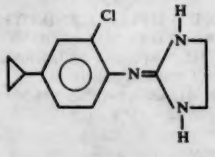
PCT Filed Aug. 20, 1980, Ser. No. 253,860

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1979, 2933930

Int. Cl.^{3} A61K *31/415;* C07D *233/50*

U.S. Cl. 424—273 R 3 Claims

1. A compound of the formula



(I)

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3. A method for slowing the heart rate of a warm-blooded animal in need thereof, which comprises orally, parentally, or rectally administering an effective bradycardiac amount of a compound of claim 1.

4,341,789

CYCLOALIPHATIC PROSTAGLANDIN ANALOGUES

Frederick Cassidy, Harlow, and Gordon Wootton, Sawbridgeworth, both of England, assignors to Beecham Group Limited, England

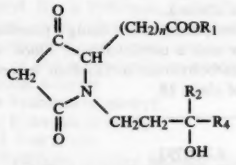
Division of Ser. No. 732,726, Oct. 15, 1976, Pat. No. 4,138,407. This application Nov. 20, 1978, Ser. No. 962,057

Claims priority, application United Kingdom, Oct. 25, 1975, 43990/75; May 22, 1976, 21278/76

Int. Cl.³ C07D *207/38;* A61K *31/40*

U.S. Cl. 424—274 7 Claims

1. A compound of the formula:

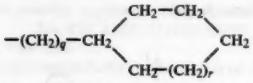


or a pharmaceutically acceptable salt thereof wherein n has a value of 4 to 8;

R_1 is hydrogen, alkyl of 1 to 12 carbon atoms, phenyl, benzyl or toluyl;

R_2 when taken independently of R_4 is hydrogen or alkyl of 1 to 4 carbon atoms; and

R_4 when taken independently of R_2 is



in which

q has a value of 0 to 6 and

r has a value of 0 to 3; or

R_2 and R_4, together with the carbon atom to which they are attached, are cycloalkylidene of 5 to 8 carbon atoms.

7. A pharmaceutical composition for effecting a prostaglandin-like activity which comprises an effective amount of a compound according to claim 1 in combination with a pharmaceutical carrier.

4,341,790

PYRROLIDINYLALKYLCARBOXYLIC ACID AMIDE DERIVATIVES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Hans Betzing, Kerpen-Horrem; Jürgen Biedermann, Pulheim-Stommel; Carsten Materne, Bonn, and Volker Neuser, Bergheim-Ahe, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie. GmbH, Fed. Rep. of Germany

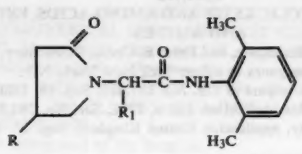
Filed Jun. 3, 1980, Ser. No. 155,952

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1979, 2923975; Jun. 13, 1979, 2924011

Int. Cl.³ A61K *31/40, 31/44;* C07D *207/27, 207/273*

U.S. Cl. 424—274 6 Claims

1. 2-oxo-1-pyrrolidinylalkylcarboxylic acid amides of the general formula I



I

in which R is selected from the group consisting of hydrogen and hydroxyl and R_1 is selected from the group consisting of hydrogen and methyl, and the pharmaceutically tolerable acid addition salts of compounds of formula I having a basic nitrogen atom.

6. A method of treating a patient for cerebral circulatory disturbance, which comprises administering to the patient a therapeutically effective dose of at least one compound defined in any one of claims 1, 4 or 5.

4,341,791

6-, 2- AND 1,1-DISUBSTITUTED-1-CARBADETHIAPEN-2-EM-3-CARBOXYLIC ACID S-OXIDES

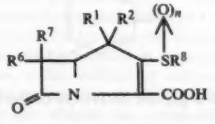
Burton G. Christensen, Scotch Plains, and David H. Shih, Manalapan, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 10, 1980, Ser. No. 196,004

Int. Cl.³ A61K *31/40;* C07D *487/04*

U.S. Cl. 424—274 7 Claims

1. A compound having the formula:



and the pharmaceutically acceptable salts and esters thereof; and R^1, R^2, R^6, R^7 and R^8 are independently selected from the group consisting of: hydrogen (R^1 and R^2 are not H); substituted and unsubstituted: alkyl, alkenyl, and alkynyl each having from 1–10 carbon atoms; cycloalkyl, cycloalkylalkyl, and alkylcycloalkyl having 3–6 carbon atoms in the cycloalkyl rings and 1–6 carbon atoms in the alkyl moieties; phenyl, aralkyl, aralkenyl, and aralkynyl wherein the aryl moieties are phenyl and the alkyl, alkenyl and alkynyl moieties have 1–6 carbon atoms; wherein the substituent or substituents relative to the above-named radicals are selected from the group consisting of: amino, mono-, di-, and trialkylamino, hydroxyl, alkoxyl, mercapto, alkylthio, phenylthio, sulfamoyl, amidino, guanidino, nitro, chloro, bromo, fluoro, cyano and carboxy; and wherein the alkyl moieties of the above-recited substituents have 1–6 carbon atoms; n is 1 or 2; R^1 and R^2 may be joined together to form spirocycloalkyl having 3–6 ring carbon atoms.

6. An antibiotic pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim 1 and a pharmaceutical carrier therefor.

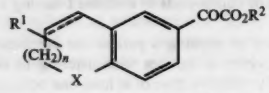
4,341,792

HETEROBICYCLIC KETO- AND AMINO-ACIDS, ESTERS AND AMIDES

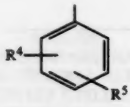
Ian T. Barnish, Ramsgate, and Peter E. Cross, Canterbury, both of England, assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 187,431, Sep. 15, 1980, abandoned. This application Jul. 6, 1981, Ser. No. 280,862
Claims priority, application United Kingdom, Sep. 15, 1979, 7932049
Int. Cl.[3] A61K *31/34, 31/35;* C07D *307/84, 311/041*
U.S. Cl. 424—275 39 Claims

1. A compound of the formula



or a pharmaceutically acceptable cationic salt thereof, wherein R^1 is hydrogen, alkyl having from one to four carbon atoms or



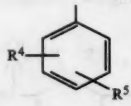
where R^4 and R^5 are the same or different and are each a member selected from the group consisting of H, OH, F, Cl, Br, I and alkyl and alkoxy having from one to four carbon atoms;

R^2 is hydrogen or alkyl having from one to four carbon atoms;

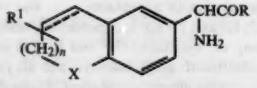
X is oxygen or sulfur;

n is 0 or 1;

and the broken line is a bond or no bond; with the proviso that when X is oxygen and the broken line is no bond, R^1 is



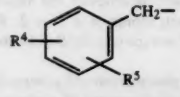
16. An L- or DL-glycine derivative of the formula



or a pharmaceutically acceptable cationic and acid addition salt thereof wherein

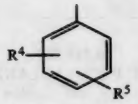
R is OR^2 or NHR^3 where R^2 is hydrogen or alkyl having from one to four carbon atoms and

R^3 is a member selected from the group consisting of hydrogen, alkyl having from one to four carbon atoms, alkoxyalkyl having from one to four carbon atoms in each of the alkyl groups and



where R^4 and R^5 are the same or different and are each a member selected from the group consisting of H, OH, F, Cl, Br, I and alkyl and alkoxy having from one to four carbon atoms;

R^1 is hydrogen, alkyl having from one to four carbon atoms or



where R^4 and R^5 are as defined above;

X is oxygen or sulfur;

n is 0 or 1 and

the broken line is a bond or no bond; with the proviso that when X is oxygen, n is 0 and the broken line is no bond, R is NHR^3.

29. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and a cardiovascular blood flow, oxygen availability or carbohydrate metabolism increasing amount of a compound of claim 1.

30. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and a cardiovascular blood flow, oxygen availability or carbohydrate metabolism increasing amount of a compound of claim 16.

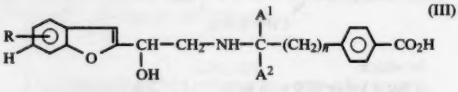
4,341,793

SECONDARY AMINES AND THEIR USE IN PHARMACEUTICAL COMPOSITIONS

Michael J. Ferris, Sutton, England, assignor to Beecham Group Limited, England

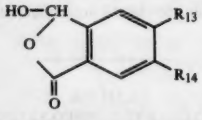
Filed Nov. 7, 1980, Ser. No. 204,846
Claims priority, application United Kingdom, Nov. 15, 1979, 7939536
Int. Cl.[3] A61K *31/365;* C07D *307/88;* A61K *31/34;* C07D *307/81*
U.S. Cl. 424—279 10 Claims

1. A compound of formula (III):



(III)

or an ester thereof based on a lower alkanol optionally substituted by a hydroxy group not on the α-carbon atom or alcohols of the formula $HOCHR_{11}—OCO—R_{12}$ and



wherein R_{11} is a hydrogen atom or methyl, R_{12} is lower alkyl or phenyl, R_{13} is hydrogen, methyl, or methoxy and R_{14} is hydrogen, methyl, or methoxy, an amide thereof wherein the amide comprises and amino, mono or di-(C_{1-6}) alkyl amino moiety, or pharmaceutically acceptable salt of the carboxylic acid group, wherein

A^1 is hydrogen or methyl;

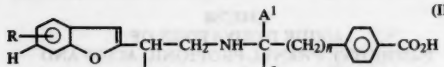
A^2 is hydrogen or methyl;

n is 1, 2 or 3; and

R is hydrogen, chlorine, bromine, hydroxy, methoxy, nitro, amino or trifluoromethyl.

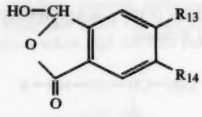
7. A method for treating hyperglycaemia or obesity in humans and domestic mammals comprising the administration of

an effective, non-toxic amount of a compound of formula (III):



(III)

or an ester thereof based on a lower alkanol optionally substituted by a hydroxy group not on the α-carbon atom or alcohols of the formula $HOCHR_{11}—OCO—R_{12}$ and



wherein R_{11} is a hydrogen atom or methyl, R_{12} is lower alkyl or phenyl, R_{13} is hydrogen, methyl, or methoxy and R_{14} is hydrogen, methyl, or methoxy, an amide thereof wherein the amide comprises and amino, mono or di-(C_{1-6}) alkyl amino moiety, or pharmaceutically acceptable salt of the carboxylic acid group, wherein

A^1 is hydrogen or methyl;

A^2 is hydrogen or methyl;

n is 1, 2 or 3; and

R is hydrogen, chlorine, bromine, hydroxy, methoxy, nitro, amino or trifluoromethyl.

4,341,794

2-NITRONAPHTOFURAN DERIVATIVES AND USE AS CELL GROWTH REGULATORS

Rene R. Royer, Paris, and Jean-Pierre Buisson, Sartrouville, both of France, assignors to Agence Nationale de Valorisation de la Recherche, Paris, France

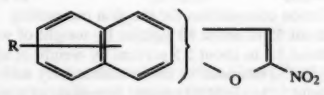
Filed Jan. 30, 1981, Ser. No. 229,860

Claims priority, application France, Feb. 4, 1980, 80 02354

Int. Cl.³ A61K *31/345*; C07D *307/92*

U.S. Cl. 424—285 **5 Claims**

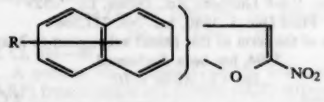
1. A 2-nitronaphthofuran derivative of the formula



I

in which the linkage between the furan ring and the naphthalene nucleus is formed in a position selected from the 1,2-, 2,3- and 2,1- positions of the said naphthalene nucleus, and R, which can be located in any free position of the said naphthalene nucleus, is selected from the group consisting of a halogen atom and a methoxy group.

5. A method of regulating cell growth which comprises administering to the cells a cell growth regulating amount of a 2-nitronaphthofuran derivative of the formula



I

in which the linkage between the furan ring and the naphthalene nucleus is formed in a position selected from the 1,2-, 2,3- and 2,1- positions of the said naphthalene nucleus, and R, which can be located in any free position of the said naphthalene nucleus, is selected from the group consisting of a halogen atom and a methoxy group.

4,341,795

ASYMMETRICAL BIS-CARBAMATE COMPOUNDS

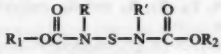
Wei C. Liang, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 1, 1975, Ser. No. 636,623

Int. Cl.³ A01N *47/12*; C07C *153/00*

U.S. Cl. 424—300 **54 Claims**

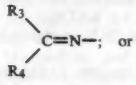
1. A compound of the formula:



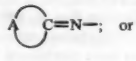
wherein:

R and R′ are individually alkyl radicals having from 1 to 4 carbon atoms;

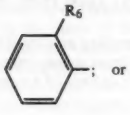
R_1 is: naphthyl, benzothienyl, benzofuranyl or:



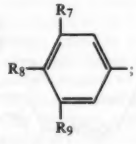
; or



; or



; or



;

R_2 is other than R_1 and is a substituted or unsubstituted alkyl, cycloalkyl, phenylalkyl, naphthylalkyl or a heterocycloalkyl group, wherein the heterocyclic moiety is a five- or six-member ring which includes in any combination, one or two oxygen, sulfur, sulfinyl or sulfonyl groups and which may also include one divalent, amino, alkylamino or carbonyl group; wherein the permissible substituents on said groups are one or more halogen, nitrile, nitro, alkyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy, alkoxycarbonylamino, or alkylcarbonylamino groups in any combination, or R_2 is alkoxyalkyleneoxyalkyl, alkoxy(dialkyleneoxy)alkyl or alkoxy(trialkyleneoxy)alkyl; with the proviso that except where R_2 is alkyl, no single alkyl or alkylene moiety in any R_2 group may include more than six carbon atoms;

R_3 is hydrogen, alkyl, alkylthio or cyano;

R_4 is alkyl, alkylthio, alkoxy, alkanoyl or alkoxycarbonyl, all of which may be unsubstituted or aliphatically substituted in any combination with one or more cyano, nitro, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy, aminocarbonyl, alkylaminocarbonyl, or dialkylaminocarbonyl groups or R_4 is phenyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl or a R_5CONH- or R_5CON(alkyl)-group, where R_5 is hydrogen, alkyl, alkoxy or alkylthio; and

A is a divalent aliphatic chain, completing a five or six member ring, which includes in any combination, one or two oxygen, sulfur, sulfinyl or sulfonyl groups and which may also include one divalent amino, alkylamino or carbonyl group;

R_6 is alkoxy, alkylthio, alkyl, alkylthioalkyl, 2-dioxolanyl or halogen;

R_7 is alkyl;

R_8 is hydrogen, alkyl, halogen, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxy, dialkylamino, formylamino, alkylcarbonylamino, alkoxycarbonylamino or dialkylaminomethyleneimino;

R_9 is hydrogen or alkyl;

with the proviso that the number of aliphatic carbon atoms in R_3, R_4, A, R_6, R_7, R_8 and R_9, individually, may not exceed eight.

18. S-Methyl-N-[N'-(N''-methyl-N''-(n-dodecyloxycarbonyl)aminosulfenyl)N'-methylcarbamoyloxy]thioacetimidate.

4,341,796

CONTROL OF ACARIDS WITH BIPHENYLMETHYL PERHALOALKYLVINYLCYCLOPROPANECARBOXYLATES

John F. Engel, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

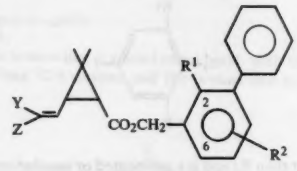
Continuation-in-part of Ser. No. 52,043, Jun. 25, 1979, Pat. No. 4,238,505, and a continuation-in-part of Ser. No. 927,198, Jul. 24, 1978, abandoned, and Ser. No. 870,973, Jan. 20, 1978, abandoned. This application Oct. 8, 1980, Ser. No. 195,035

The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.

Int. Cl.³ A01N *37/00, 37/08*

U.S. Cl. 424—305 **5 Claims**

1. A method of controlling acarids which comprises applying to said acarids or a locus where control is desired an acaricidal or acarid repellent amount of a compound of the formula



wherein one of Y and Z is trifluoromethyl, and the other of Y and Z is halogen, R^1 is halogen or lower alkyl and R^2 is hydrogen, halogen or lower alkyl, or R^1 and R^2 are both hydrogen.

4,341,797

BIS-(AMIDINE PHENYL)CYCLOHEXANECARBOXYLIC ACID KETONES, COMPOSITIONS CONTAINING SAME AND METHOD OF USE

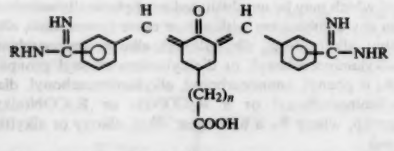
George C. Rovnyak, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 5, 1981, Ser. No. 270,720

Int. Cl.³ C07C *123/00;* **A61K** *31/195*

U.S. Cl. 424—319 **8 Claims**

1. A compound of the structure



wherein R is H, lower alkyl, phenyl or phenyl substituted with a lower alkyl, lower alkoxy, halogen or trifluoromethyl group, and n is 0, 1 or 2, or pharmaceutically acceptable acid-addition salts thereof.

7. An anti-inflammatory composition comprising a therapeutically effective amount of a compound as defined in claim 1 in a physiologically aceptable carrier therefor.

4,341,798

AMIDE DERIVATIVES OF P-ISOBUTYL-PHENYL-PROPIONIC ACIDS AND RELATED PHARMACEUTICAL COMPOSITIONS

Alberto Reiner, Como, Italy, assignor to Laboratori Prophin S.p.A., Milan, Italy

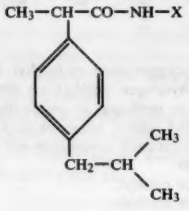
Filed Jul. 15, 1981, Ser. No. 283,430

Claims priority, application Italy, Jul. 22, 1980, 2360 A/80

Int. Cl.³ A61K *31/195;* **C07C** *101/22*

U.S. Cl. 424—319 **6 Claims**

1. Amide derivatives of the p-isobutylphenyl-propionic acid, having the general formula:



wherein X represents the radical of a substituted amine of the group consisting of essential lysine, metatrifluorotoluidine, glutamic acid and aspartic acid.

6. A pharmaceutical composition having anti-inflammatory activity, characterized by containing an effective amount of the amide derivative of p-isobutylphenylpropionic acid according to claims 1, 2, 3, 4 or 5, together with a suitable pharmaceutical carrier.

4,341,799

LOTION AND METHOD FOR CLEANSING AND CONDITIONING THE SKIN THEREWITH

Allen H. Good, 149 Kent Place Blvd., Summit, N.J. 07901

Filed Dec. 29, 1980, Ser. No. 220,367

Int. Cl.³ A61K *7/00, 7/50*

U.S. Cl. 424—365 **10 Claims**

1. A skin lotion composition for the skin comprising

(a) from about 55 to about 80 percent by weight of water;

(b) from about 1.1 to about 5.5 percent by weight of at least one C_{10} to C_{18} saturated or monoolefinic fatty acid;

(c) from about 15 to about 30 percent by weight of a mineral oil having a viscosity in the range of from about 60 to about 350 SSU at 100° F.;

(d) from about 0.4 to about 2.0 percent by weight of a C_{12}-C_{15} alkali metal alcohol ether sulfate; and

(e) a cosmetically compatible alkaline neutralizing agent in amount sufficient to obtain a pH for the composition in the range of 6.5 to 7.5.

4,341,800

FOOD FOR FROGS

Dozier Lester, 156-F Guilbeau Rd., Duson, La. 70529

Filed Dec. 1, 1980, Ser. No. 211,566

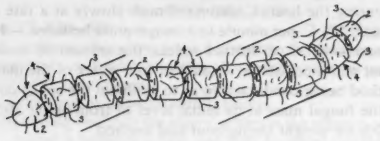
The portion of the term of this patent subsequent to May 10, 1994, has been disclaimed.

Int. Cl.³ A23K *1/10*

U.S. Cl. 426—1 **2 Claims**

1. A food for ingestion by frogs, said food prepared by mixing fish meal, ground crawfish hulls, sodium alginate, xanthan gum and ground limestone, and sodium hexametaphosphate in selective proportions with an equal quantity of water by weight to form a nutriment; adding horsehair to said nutriment; rolling said nutriment on a flat surface to shape an elon-

gated mass; cutting slots in said elongated mass in spaced relationship without severing said horsehair; and allowing said nutriment to dry, whereby said horsehair projects from said



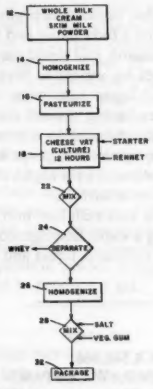
elongated mass, and from discrete particles broken from said elongated mass along said slots, and said horsehair stimulates the frogs to swallow when said discrete particles are ingested by the frogs.

4,341,801

ULTRAFILTRATION PROCESS FOR THE PREPARATION OF CREAM CHEESE

Barry J. Weissman, Norwalk, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Oct. 17, 1977, Ser. No. 842,654
Int. Cl.³ A23C *9/12*
U.S. Cl. 426—40 **10 Claims**



1. In a process for making cream cheese from raw materials comprising milk and cream wherein at least a portion of the raw materials are subjected to ultrafiltration and the rententate thereof is employed in a pre-cheese mix which is subsequently cultured and stabilized, the improvement comprising, introducing into the pre-cheese mix prior to ultrafiltration an addition of whey protein solids.

4,341,802

PRODUCTION OF PROTEIN WITH REDUCED NUCLEIC ACID

Thomas R. Hopkins, Bartlesville, Okla., assignor to Provesto Corporation, Bartlesville, Okla.

Filed Oct. 24, 1980, Ser. No. 200,367
Int. Cl.³ A23L *1/28*
U.S. Cl. 426—60 **16 Claims**

1. A process for producing nucleic acid reduced protein (NARP) from a single cell protein (SCP) mixture comprising
(a) subjecting an SCP mixture containing single cells with high nucleic acid content and a liquid to a nucleic acid removal step wherein said SCP mixture is heated with a mineral acid at temperatures between about 50° C. and about 100° C. so at least a significant portion of the nucleic acid in the single cells is transferred to said liquid while the single cells remain essentially intact thus producing a mixture of cells with reduced mucleic acid content and a nucleic acid containing fluid,
(b) separating said cells with reduced nucleic acid content from said nucleic acid containing fluid,
(c) extracting the cells with reduced nucleic acid content with base at a pH of about 10.6 or more to obtain a NARP mixture of a liquid and a solid phase,
(d) separating the liquid phase being essentially free of insoluble cellular material and the solid phase being essentially free of the liquid,
(e) recovering said liquid phase as a NARP solution and the first product of the process, and
(f) recovering the solid phase as a NARP cell product and the second product of the process.

4,341,803

METHOD FOR PRODUCING DRY FRUIT CHIP

Daikichi Koshida, 1-19-10, Hotarugaike Nishi-Machi, Toyonaka-Shi, Osaka-Fu; Ko Sigisawa, 2-8-15, Chiyogaoka, Nara-Shi, Nara-Ken; Junji Majima, 12-21, Kita Showa-Machi, Nishinomiya-Shi, Hyogo-Ken, and Ryuichi Hattori, 96 Koyama Higashi Ohno-Cho, Kita-Ku, Kyoto-Shi, Kyoto-Fu, all of Japan

Filed Feb. 5, 1981, Ser. No. 231,911
Claims priority, application Japan, Feb. 5, 1980, 55-11997
Int. Cl.³ A23B *7/02*
U.S. Cl. 426—242 **5 Claims**

1. A method for producing dry fruit chips for ready eating as snack fruit comprising the steps of freeze-drying fresh fruit chips having a predetermined volume and an adjusted water-soluble sugar concentration in the range of 6–25% by weight to reduce the moisture content in said fresh fruit chips to 15–60% by weight so as to maintain the predetermined volume of said fruit chips, microwave irradiation-drying said freeze-dried fruit chips under vacuum to thaw the remaining moisture content and to uniformly disperse the water-soluble sugar concentration throughout said freeze-dried fruit chips and to further reduce the moisture content to 10–40% by weight, and vacuum-drying said microwave-irradiation dried fruit chips to still further reduce the moisture content to below 5% by weight so as to produce dry fruit chips having a moderate hardness.

4,341,804

DECAFFEINATION OF AQUEOUS ROASTED COFFEE EXTRACT

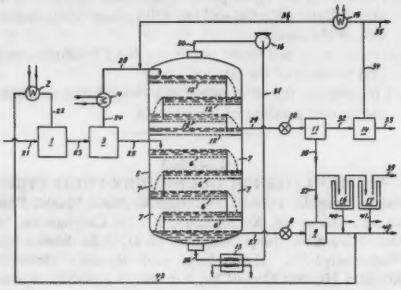
Ravi Prasad, Middletown, N.Y.; Martin Gottesman, Paramus, N.J., and Robert A. Scarella, Hawthorne, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Division of Ser. No. 23,878, Mar. 26, 1979, Pat. No. 4,246,291.
This application Sep. 15, 1980, Ser. No. 187,223
The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.
Int. Cl.³ A23F *5/18*
U.S. Cl. 426—387 **4 Claims**

1. A method for decaffeinating an aqueous caffeine-containing extract of roasted coffee comprising the steps of:
(a) stripping volatiles from a roasted coffee extract and condensing said volatiles,
(b) evaporatively concentrating the stripped extract and condensing the evaporate,
(c) feeding the concentrated extract to the midsection of a sieve-plate contact tower where it is contacted in countercurrent fashion in the bottom-section of the tower at a temperature between 10° C. and 180° C. and a pressure between 50 and 450 atmospheres with a rising and recirculating stream of a decaffeinating fluid, said fluid being either a liquid gas or a supercritical fluid at the conditions present in the tower,
(d) removing the decaffeinated extract from the bottom of the tower,
(e) feeding an essentially caffeine-free aqueous stream to the

top of the sieve-plate contact tower, said stream containing the condensed evaporate of step (b),

(f) passing the caffeine-containing fluid from step (c) through the top-section of the sieve-plate contact tower where it is contacted in countercurrent fashion with and decaffeinated by the aqueous stream of step (e),



(g) removing the caffeine-containing aqueous stream at the mid-section of the tower at a point above the elevation of the extract feed,

(h) removing the decaffeinated fluid at the top of the tower and recirculating this fluid to the bottom of the tower.

4,341,805

HIGH DIETARY FIBER PRODUCT

Vinod K. Chaudhary, Manhattan, Kans., assignor to Miller Brewing Company, Milwaukee, Wis.

Continuation of Ser. No. 73,953, Sep. 10, 1979, abandoned. This application Dec. 11, 1980, Ser. No. 215,291

Int. Cl.³ A23L *1/185;* C12C *7/00;* A21D *13/02*

U.S. Cl. 426—481 **2 Claims**

1. A method of preparing a product for human consumption containing protein and having a high dietary fiber content and a low phytic acid content, which method consists essentially of drying brewer's spent grain to less than about 12% moisture by weight, milling the dried brewer's spent grain to obtain a ground product having particle sizes ranging from about 600 microns down to about 50 microns and isolating the ground particles having a particle size of at least about 120 microns which constitute said product and contain about 18% to 22% protein and about 65% to 75% dietary fiber.

4,341,806

METHOD OF HEATING AND FREEZING A TEXTURIZED MYCELIAL FUNGAL MASS

Bruce Gadsby, and Kate A. Simmons, both of High Wycombe, England, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 116,666, Jan. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 2,708, Jan. 10, 1979, abandoned, which is a continuation-in-part of Ser. No. 872,081, Jan. 25, 1978, abandoned. This application Aug. 14, 1981, Ser. No. 292,804

Claims priority, application United Kingdom, Jan. 25, 1977, 2959/77

Int. Cl.³ A23J *3/00*

U.S. Cl. 426—511 **5 Claims**

1. A method of improving the toughness and increasing the succulence of a texturized mycelial fungal mass having a macrofiber structure similar to the fibers of natural meat and having a solids content of from about 20 to about 40% by weight, the solids content of which consists essentially of fungal mycelia, consisting essentially of:

(a) heating the texturized mass in an atmosphere of substantially saturated steam for a period of from 1–150 minutes so that the entire mass is at a temperature of at least 90° C. to reduce the bound water of the mass by about 4% by weight and increase the free water of the mass by about 4% by weight; and

(b) freezing the heated, texturized mass slowly at a rate of about 0.5% C. per minute to a temperature between −10° C. and −40° C. to further reduce the amount of bound water and increase the amount of free water of the mass;

said method being conducted so as to maintain the solids content of the fungal mass at its initial level of from about 20 to about 40% by weight throughout said method.

4,341,807

FOOD PRODUCTS CONTAINING MICROFIBRILLATED CELLULOSE

Albin F. Turbak, Convent Station; Fred W. Snyder, Wharton, both of N.J., and Karen R. Sandberg, Shelton, Wash., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,741

Int. Cl.³ A23L *1/04*

U.S. Cl. 426—570 **9 Claims**

1. A process for the preparation of a food product comprising

mixing together an edible liquid which swells cellulose, an additive which imparts a food flavor and fibrous cellulose to form a liquid suspension, said liquid suspension containing no more than 10% by weight of fibrous cellulose,

repeatedly passing said liquid suspension through a high pressure homogenizer having a small diameter orifice in which the mixture is subjected to a pressure drop of at least 3000 pounds per square inch gauge and a high velocity shearing action followed by a high velocity decelerating impact against a solid surface,

said process converting said cellulose into microfibrillated cellulose and forming a stable homogeneous suspension of said microfibrillated cellulose, liquid and food additive.

4,341,808

FROZEN RAW CUSTARD

Barbara A. Croyle, Parma, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Jan. 9, 1981, Ser. No. 223,838

Int. Cl.³ A23L *1/04, 1/32*

U.S. Cl. 426—573 **9 Claims**

1. A frozen, uncooked raw custard preparation, a substantial proportion of which is whole egg or egg white based whole egg replacer, capable of withstanding freeze-thaw cycling, and capable of homogeneous suspension of food particulates prior to freezing, comprising

(1) an organoleptically effective amount of said food particulates;

(2) uncooked, whole egg or egg white based whole egg replacer; and

(3) a milk-derived portion wherein said egg and milk-derived portion are present in the weight ratio of about 0.45:1 to about 0.75:1;

the milk derived portion comprising fluid milk, a thixotropic gum, and a water-absorbing quantity of a protein concentrate, in proportion to provide with said whole eggs or egg replacer a viscosity sufficient for homogeneous suspension of said food particulates prior to freezing, the protein content by Kjeidahl analysis from the fluid milk and protein concentrate being at least about 4% by weight of the milk derived portion.

4,341,809

STABILIZED STARCH COMPOSITION

Richard R. Leshik, and Jay H. Katcher, both of Dover, Del., assignors to General Foods Corporation, White Plains, N.Y.

Filed Nov. 12, 1980, Ser. No. 206,101
Int. Cl.³ A23L *1/195*
U.S. Cl. 426—576 26 Claims

1. A process for preparing a dry starch composition which is resistant to degradation when dry mixed with an acid and stored dry comprising:

(a) forming an aqueous starch slurry;

(b) adding buffer to the slurry, wherein the amount of buffer added is between 0.05% and 10% by weight of the starch so that the pH of the starch slurry is between 5 and 12 after said buffer addition; and then

(c) drying the starch and buffer slurry.

4,341,810

GELLED GELATIN FOOD PRODUCT PREPARED FROM NON-GELLED AQUEOUS GELATIN COMPOSITIONS

Joseph L. Shank, Matteson, Ill., assignor to Dynagel Incorporated, Calumet City, Ill.

Filed Aug. 27, 1981, Ser. No. 295,795
Int. Cl.³ A23L *1/04*
U.S. Cl. 426—576 38 Claims

1. A method of preparing a gelled food product comprising the steps of:

providing an ungelled aqueous gelatin concentrate comprising about 10 to about 30 weight percent gelatin and urea, the weight ratio of said gelatin to said urea being about 1:0.3 to about 1:1.5, said concentrate having a gel-set temperature less than about 20° C. and a pH value of between about 2.5 and about 7, and having the property whereby dilution thereof with water to a gelatin concentration of about 2 weight percent of the total composition while maintaining substantially the pH value of the concentrate produces a diluted composition having a gel-set temperature higher than that of said concentrate; and

diluting said gelatin concentrate with an aqueous composition to a gelatin concentration of about 1 to about 5 weight percent of the total composition, and maintaining said diluted composition at a temperature not higher than said diluted composition gel-set temperature for a period of time sufficient to produce a gel.

4,341,811

FLUID NON-DAIRY CREAMER

Charles E. Rule, Lakewood, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Apr. 15, 1981, Ser. No. 254,467
Int. Cl.³ A23C *11/00*
U.S. Cl. 426—602 9 Claims

1. A protein-free, lipoidal coffee whitener, the functional ingredients of which consist essentially of

a pasteurized, homogenized water-rich lipoidal emulsion of about 6–15% edible fat and about 0.6–2% mixed lipoidal emulsifier, and water, said fat having a Wiley Melting Point below about 120° F., said emulsifier constituting about 0.3–1% low HLB, not substantially greater than 5, mono-and diglyceride or propylene glycol partial ester of fat-forming acids and about 0.3–1% polyglycerol ester of fatty acids having an HLB value above about 10, a hydroxyl value of about 400–600, a saponification number of about 60–100, and acid values of less than about 10.

4,341,812

EDIBLE FAT PRODUCT I

John Ward, Mississauga, Canada, assignor to Nabisco Brands, Inc., New York, N.Y.

Filed Sep. 16, 1980, Ser. No. 187,697
Int. Cl.³ A23D *3/02, 5/00*
U.S. Cl. 426—603 22 Claims

1. A process of forming a low-trans-isomer-containing edible fat product with a trans-isomer content no greater than about 1%, which comprises:

preparing a randomly interesterified mixture of saturated babassu nut oil having an iodine value of less than 2.0 and a second saturated edible oil having an iodine value of less than 2.0, the mixture comprising said babassu nut oil and said second oil in the weight proportions of about 75:25 to about 40:60, the interesterified mixture resulting in a hardstock having an SFI solids content of at least about 45% at 92° F., and,

blending said hardstock with a liquid vegetable oil in proportions such that the resulting blend contains about 5% to about 20% by weight of said hardstock.

4,341,813

EDIBLE FAT PRODUCT II

John Ward, Mississauga, Canada, assignor to Nabisco Brands, Inc., New York, N.Y.

Filed Sep. 16, 1980, Ser. No. 187,698
Int. Cl.³ A23D *3/02, 5/00*
U.S. Cl. 426—603 19 Claims

1. A process of forming a low-trans-isomer-containing edible fat product with a trans-isomer content no greater than about about 1%, which comprises:

preparing a randomly interesterified mixture of a first saturated oil, obtained from babassu nut oil or a fractionated lauric oil having fatty acid components equivalent to babassu nut oil, having an iodine value of less than 2.0 and a second saturated edible oil having an iodine value of less than 2.0, the mixture comprising said first oil and said second oil in the weight proportions of about 75:25 to about 40:60, the interesterified mixture resulting in a hardstock having an SFI solids content of at least about 30% at 92° F., and,

blending said hardstock product with a liquid vegetable oil in proportions such that the resulting blend contains about 20% to about 30% by weight of said hardstock.

4,341,814

PEANUT BUTTER STABILIZER

Stephen A. McCoy, Villa Hills, Ky., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 24, 1980, Ser. No. 200,123
Int. Cl.³ A23D *5/00*
U.S. Cl. 426—607 14 Claims

1. A peanut butter stabilizer composition comprising:

(a) an intermediate melting fat fraction having an IV of from about 25 to about 45 and a solid content of between 80% and 95% at temperatures of from 50° F. to 90° F., and a solid content below 50% at 115° F.; and

(b) a hydrogenated oil fraction having an IV of less than 10, which comprises a substantially completely hydrogenated fat and oil having a high proportion of fatty acids containing 20 to 24 carbon atoms;

wherein the ratio of the intermediate melting fat fraction to the hydrogenated oil fraction is from 4:1 to 1:1.5.

4,341,815

METHOD OF ELECTROSTATICALLY COATING AN ARTICLE WITH PAINT

Thomas L. Bagby, Washington; Gary L. Demeny, Delavan, and Robert G. Smead, St. Charles, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

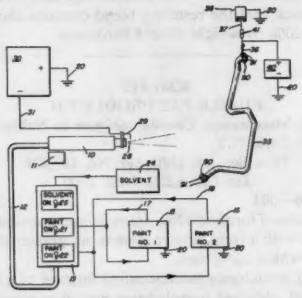
Division of Ser. No. 18,019, Mar. 6, 1979, Pat. No. 4,258,655, which is a continuation of Ser. No. 678,844, Apr. 21, 1976, abandoned. This application Nov. 10, 1980, Ser. No. 205,827
Int. Cl.³ B05D *1/06*
U.S. Cl. 427—33 10 Claims

1. A method of electrostatically coating an article (35) with paint, comprising:

atomizing and projecting the paint from a nozzle (33) of a

gun (10), said gun (10) having an electrode (29) insulated therefrom and so spaced from the nozzle (33) and so shaped as to be capable of generating a corona discharge in its vicinity when adequately charged;

imparting an electric charge of one polarity to the paint particles at the nozzle (33) by establishing a preselected electric field (32) between said electrode (29) and the nozzle (33), said field (32) being of sufficient intensity to generate said corona discharge;



projecting the paint along a path through the vicinity of said electrode (29) and thus through a zone of ions (80) established there by the corona discharge, thereby imparting an electric charge of the opposite polarity to another portion of the paint particles and including reversing the polarity of a portion of the paint particles eminating from the nozzle (33) and providing a plurality of diversely charged particles; and

electrically charging the article (35) to be coated in order to influence the direction of motion of the diversely charged particles.

4,341,816

METHOD FOR ATTACHING DISC- OR PLATE-SHAPED TARGETS TO COOLING PLATES FOR SPUTTERING SYSTEMS

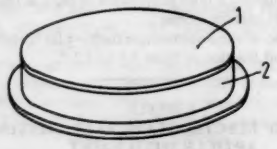
Richard Lauterbach, Munich, and Hartmut Keller, Poecking, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 168,653

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2933835

Int. Cl.³ B05D *1/08*

U.S. Cl. 427—34 **12 Claims**



1. A method of attaching a body composed of a select target material onto a cooling plate for sputtering systems, comprising:

applying a layer of an adhesive material compatible with said select target material onto a surface of said body;

plasma spraying said adhesive layer with a relatively thick solderable layer having a thickness in the range of about 30 to 100 μm and being composed of a material selected from the group consisting of copper, copper/glass mixtures and silver, and

soft-soldering such coated surface of the body with a surface of a cooling plate.

4,341,817

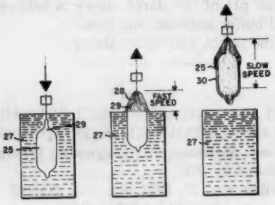
FLASHLAMP CONTAINMENT COATING

John E. Tozier, and John W. Shaffer, both of Williamsport, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 14, 1981, Ser. No. 263,657

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—54.1 **10 Claims**



1. A process for coating a photoflash lamp with a UV-curable resin including the steps of applying varying amounts of UV-curable resin to different portions of the photoflash lamp and curing said UV-curable resin by impingement thereof with energy from a radiant energy source, said process characterized by the improvement wherein a different thickness of said UV-curable coating is applied to different portions of said photoflash lamp by a dip-coating process wherein said photoflash lamp is withdrawn from the coating composition at a non-uniform rate.

4,341,818

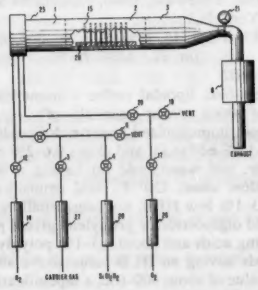
METHOD FOR PRODUCING SILICON DIOXIDE/POLYCRYSTALLINE SILICON INTERFACES

Arthur C. Adams, and Hyman J. Levinstein, both of Berkeley Heights, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 16, 1980, Ser. No. 159,865

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—85 **9 Claims**



1. A process for producing a body comprising a region of silicon dioxide in intimate contact with a region of polycrystalline silicon wherein said body is suitable for a semiconductor device application, said process comprising the steps of oxidizing silicon in said body to produce said region of silicon dioxide and depositing said region of polycrystalline silicon on said region of silicon dioxide characterized in that said silicon is oxidized in oxygen at a partial pressure in the range 0.2 to 10 Torr and at an oxidation temperature in the range 900 to 1000 degrees C., said oxygen is removed after oxidation while main-

taining a protected environment, and said deposition of polycrystalline silicon is performed utilizing a reactant mixture comprising dichlorosilane wherein said reactant mixture is subjected to a temperature within 1 percent of said oxidation temperature to produce said region of silicon dioxide and wherein said region of polycrystalline silicon is deposited.

4,341,819

EPOXY COATING POWDERS WITH WRINKLE FINISHES

Dean A. Schreffler, Hamburg, and Charles M. Noonan, Bernville, both of Pa., assignors to The Polymer Corporation, Reading, Pa.

Filed Dec. 29, 1980, Ser. No. 220,709
Int. Cl.³ B05D *5/02, 5/00*
U.S. Cl. 427—195 **4 Claims**

4. A method for obtaining a wrinkled surface when coating a substrate in fusion coating processes with heat reactive epoxy resins, the improvement comprising the use of methylene disalicylic acid as the curing agent.

4,341,820

COMPOSITION OF MATTER

Lynn J. Taylor, Haslett, Mich., and John D. Grier, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 731,956, Oct. 13, 1976, abandoned, which is a continuation of Ser. No. 302,062, Oct. 30, 1972, abandoned, which is a division of Ser. No. 174,197, Aug. 23, 1971, Pat. No. 4,014,845. This application Aug. 5, 1980, Ser. No. 175,464
The portion of the term of this patent subsequent to Dec. 18, 1990, has been disclaimed.
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—226 **12 Claims**

1. A process for coating a substrate with a layer of inorganic material which comprises

(a) applying to the substrate a composition of matter containing particulate inorganic material dispersed in a fugitive vehicle system, said particulate material having a fusion temperature and said fugitive vehicle system comprising at least two organic components, at least one component being a polymeric material which is a solid at ambient temperature, has a pyrolysis temperature below said fusion temperature of said particulate material and following pyrolysis in a non-oxygen containing environment, leaves no carbonaceous residue having a deleterious affect on said particulate material, and at least one other component being a solvent for dissolving said polymeric material, said solvent being a liquid at ambient temperature and having a volatilization or decomposition temperature range of about 200° C. to about 350° C. but below the pyrolysis temperature of said polymeric material,

(b) heating said composition containing said fugitive vehicle system and said particulate inorganic material to a temperature sufficient to volatilize said solvent to form a coating of said polymeric material containing said particulate inorganic material, and

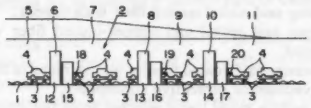
(c) further heating said resultant coating to higher temperatures sufficient to pyrolyze said polymeric material and fuse said particulate inorganic material to said substrate.

4,341,821

METHOD OF APPLYING WATER-BASE PAINT

Kimio Toda, and Yasuo Tokushima, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 650,711, Jan. 20, 1976, abandoned. This application Nov. 27, 1978, Ser. No. 963,894
Claims priority, application Japan, Jan. 25, 1975, 50-10647
Int. Cl.³ B05D *3/00*
U.S. Cl. 427—299 **9 Claims**



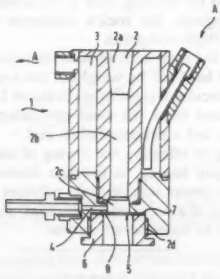
1. In the known process of coating a surface by spraying with a water-base paint which is susceptible to running down or other coating defects after application, the improvement which comprises also applying to said surface before said water-base paint dries a solvent that increases the viscosity of said water-base paint, whereby a smooth glossy coated surface is produced.

4,341,822

METHOD OF AND APPARATUS FOR IMPREGNATING FABRIC REINFORCEMENT STRUCTURES WITH A LIQUID IMPREGNANT

Reginald D. Singer, Solihull; Brian J. Holden, and John H. Hughes, both of Tamworth, all of England, assignors to Dunlop Limited, London, England

Filed Sep. 11, 1980, Ser. No. 186,507
Claims priority, application United Kingdom, May 29, 1980, 8017509
Int. Cl.³ B05D *3/02, 1/18*; B05C *3/02, 3/12*
U.S. Cl. 427—389.9 **28 Claims**



1. A method of impregnating an elongate fabric reinforcement structure with an impregnant which is liquid at impregnation temperature and chemically reacts to form an elastomer comprising continuously advancing said reinforcement structure downwards through a substantiallyvertical column of liquid impregnant and continuously supplying liquid impregnant to the lower end of said column at a rate substantially equal to the rate at which said impregnant is taken up by the reinforcement structure whereby said impregnant entering the column is continuously displaced upwards along the length of said column towards the upper end.

2. A method according to claim **1** wherein said reinforcement structure is made of textile material.

18. A method according to claim 1 or 2 wherein the cure of the impregnant is aided by the application of heat.

4,341,823

METHOD OF FABRICATING A FIBER REINFORCED METAL COMPOSITE

Richard W. Sexton, Grove City, and David M. Goddard, Powell, both of Ohio, assignors to Material Concepts, Inc., Columbus, Ohio

Filed Jan. 14, 1981, Ser. No. 224,869
Int. Cl.[3] B32B 15/02
U.S. Cl. 427—404 11 Claims

1. A method of treating a fiber, selected from the group consisting of graphite and ceramics, comprising the steps of:
coating said fiber with nickel,
coating said nickel-coated fiber with copper,
coating said nickel and copper-coated fiber with a noble metal,
immersing said coated fiber in molten metal in the absence of a vacuum or protective atmosphere,
said molten metal being selected from the group consisting of lead, aluminum, tin, or alloys thereof in which said lead, aluminum or tin is the base metal.

4,341,824

METHOD OF UPGRADING ROCK AND TREATED ROCK OBTAINED THEREFROM

Donald G. LeGrand, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 62,914, Aug. 2, 1979, abandoned. This application Apr. 9, 1981, Ser. No. 252,523
Int. Cl.[3] A01N 1/00, 3/00
U.S. Cl. 428—15 26 Claims

1. A method for treating rock in the absence of unhardened cement to upgrade the rock's resistance to environmental degradation which comprises
(1) wetting the rock with an aqueous ionic polymer solution having at least 1% by weight of the ionic polymer which has a molecular weight of up to about 1,000 and is a member selected from the class consisting of a polyacid, a polybase, and a polyampholite, and
(2) allowing or effecting the drying of the treated rock.

10. Aggregate having an average diameter of at least ¼" treated with a water soluble ionic polymer selected from the class consisting of a polyacid, a polybase, and a polyampholite in the absence of unhardened cement.

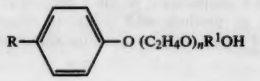
4,341,825

FOG-RESISTANT, HEAT-SEALABLE FILM

Michael B. Kemski, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 25, 1980, Ser. No. 124,421
Int. Cl.[3] C09J 7/02; B65D 75/00
U.S. Cl. 428—35 9 Claims

1. A transparent, heat-sealable, laminated film that comprises a first film layer of a difficultly heat-sealable biaxially oriented and heat set saturated polyester, and a second film layer of a readily heat-sealable organic polymer chemically interfacially joined to said first film layer by a bond that is so strong that said layers cannot be mechanically separated from one another, wherein said second film layer comprises a non-linear polyolefin polymer and from about 0.3 to 0.7 percent by weight of an anti-fogging agent which consists essentially of an alkylphenyl polyethylene glycol ether of the formula:



wherein R is an alkyl group containing from 10 to 15 carbon atoms, R^1 is an alkylene group containing from about 1 to 3 carbon atoms, and n is an integer of from 4 to 10.

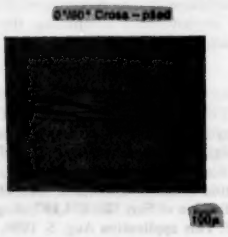
2. A package that contains a moisture-producing material, said package comprising a heat-sealed, laminated film according to claim 1.

4,341,826

INTERNAL COMBUSTION ENGINE AND COMPOSITE PARTS FORMED FROM SILICON CARBIDE FIBER-REINFORCED CERAMIC OR GLASS MATRICES

Karl M. Prewo, Vernon, and John J. Brennan, Portland, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 121,081, Feb. 13, 1980, and Ser. No. 147,672, May 7, 1980, Pat. No. 4,314,852. This application May 14, 1980, Ser. No. 149,603
Int. Cl.[3] B32B 5/12; C04B 35/74, 35/80; F02B 77/00
U.S. Cl. 428—35 20 Claims



1. An internal combustion engine combustion chamber component comprising a plurality of substantially titanium-free ceramic layers selected from the group consisting of (a) aluminosilicate, (b) lithium aluminosilicate, (c) magnesium aluminosilicate, and (d) mixtures thereof, each layer reinforced with a plurality of unidirectional, continuous length silicon carbide fibers, each layer having an axial flexural strength greater than 70,000 psi, a high fracture toughness exemplified by a critical stress intensity factor greater than 10×10^3 psi $(inch)^{\frac{1}{2}}$, high temperature strength, high temperature oxidation stability, and good insulating properties.

2. An internal combustion engine combustion chamber component comprising a silicon carbide fiber reinforced glass composite consisting essentially of about 30% to about 70% by volume silicon carbide fibers in a glass matrix selected from the group consisting of borosilicate glass, high silica content glass, aluminosilicate glass and mixtures thereof, the composite having a fracture toughness exemplified by a critical stress intensity factor above about 15,000 psi $(inch)^{\frac{1}{2}}$, high temperature strength, high temperature oxidation stability and insulating properties.

15. The component of claims 1 or 2 wherein the component is a cylinder head hot plate.

16. The component of claims 1 or 2 wherein the component is a piston, piston cap, cylinder wall sleeve, or valve.

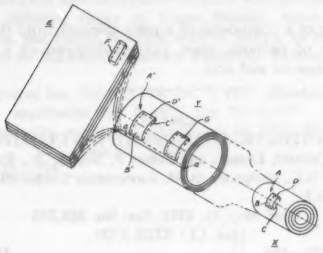
4,341,827
BIAXIALLY ORIENTED THERMOPLASTIC POLYMER FILM AND METHOD OF MANUFACTURE

Alfred A. Austen, Center Valley, and Darral V. Humphries, Allentown, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 72,807, Sep. 5, 1979, Pat. No. 4,282,277, which is a continuation-in-part of Ser. No. 941,116, Sep. 8, 1978, abandoned. This application Jul. 30, 1981, Ser. No. 288,575

Int. Cl.[3] **B29C** *23/00;* **F16L** *9/12;* **B32B** *27/06, 27/32;* **C08F** *110/06, 38/00, 22/26, 36/00*

U.S. Cl. 428—36 **35 Claims**



1. A rigid conduit comprised of a plurality of tubular-like, concentric, discrete separable layers of at least one thermoplastic crystalline polymer, each layer being a flexible film having a substantially uniform thickness within the range of 0.13 and 0.76 mm and characterized by a structure of platelet-like, discrete, generally polygonal spherulitic crystalline aggregates radially compressed and biaxially oriented in the plane of the wall of the conduit, each of the films being characterized by substantially the same density, decreased gas permeability and an increased thermal conductivity, compared to a corresponding film of the non-oriented thermoplastic crystalline polymer or of the same thermoplastic crystalline polymer which has been biaxially oriented to the same degree by conventional stretch orienting processes, a tensile impact strength at 24 C. which is at least 5 times the tensile impact strength at 24 C. of a corresponding film of the non-oriented polymer, a tensile impact strength at −45 C. which is not less than 20 percent of the tensile impact strength of 24 C. and a ratio of tensile impact strength over ultimate tensile strength which is at least 50 percent greater than such ratio determined for a corresponding film of the polymer biaxially oriented to the same degree by conventional stretch orienting processes.

2. A method for producing the rigid conduit of claim **1**, comprising:

(a) preheating a preform comprised of a plurality of concentric tubular-like discrete layers of at least one thermoplastic crystalline polymer,

(b) hydrostatically extruding the preform in a solid state through an extrusion zone comprising a converging wall, converging cross-section and a diverging geometry into an extrudate comprised of a plurality of concentric tubular-like discrete layers, each layer of which has a substantially uniform thickness within the range of 0.13 and 0.76 mm, and

(c) cooling the extrudate.

9. A flexible film comprised of at least one thermoplastic crystalline polymer having a substantially uniform thickness between 0.13 and 0.76 mm and characterized by a biaxially oriented structure of platelet-like, discrete, generally polygonal spherulitic crystalline aggregates compressed in a plane transverse to the plane of the film and biaxially oriented in the plane of the film and further characterized by substantially the same density, decreased gas permeability, increased thermal conductivity compared to a corresponding film of the non-oriented thermoplastic crystalline polymer or of the same thermoplastic crystalline polymer which has been biaxially oriented to the same degree by conventional stretch orienting processes, a microstructure substantially devoid of process induced microvoids and microfibrils other than those formed during melt processing, a tensile impact strength at 24 C. (75 F.) which is at least five times and an ultimate tensile strength which is at least one and three quarters that of a corresponding film of the thermoplastic crystalline polymer in an non-oriented state when tested in the plane of the film and the tensile impact strength at −45 C. (−50 F.) which is not less than 20 percent of the tensile impact strength at 24 C. (75 F.) and a ratio of tensile impact strength over ultimate tensile strength which is at least 50 percent greater than such ratio determined for a corresponding film of the polymer biaxially oriented to the same degree by conventional stretch orienting processes.

28. A method for producing a flexible film of claim **9** comprising:

(a) preheating a preform comprised of a plurality of concentric tubular-like discrete layers of at least one thermoplastic crystalline polymer,

(b) hydrostatically extruding the preform in a solid state through an expansion zone comprising a converging wall, a converging cross-section and a diverging geometry, into an extrudate comprised of a plurality of concentric tubular-like discrete layers, each layer of which has a substantially uniform thickness within the range of 0.13 and 0.76 mm,

(c) cooling the extrudate, and

(d) separating the layers into discrete flexible films.

4,341,828
REFINISH PAINTING APPARATUS

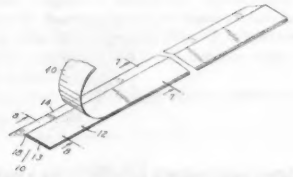
Charles E. Stephens, 10037 Dixie Hwy., Anchorville, Mich. 48004

Division of Ser. No. 954,907, Oct. 26, 1978, Pat. No. 4,201,799, which is a continuation of Ser. No. 754,229, Dec. 27, 1976, abandoned. This application Feb. 15, 1980, Ser. No. 121,673

The portion of the term of this patent subsequent to Dec. 30, 1992, has been disclaimed.

Int. Cl.[3] **B32B** *3/04;* **B05C** *21/00*

U.S. Cl. 428—40 **5 Claims**



1. Masking tape adapted for use in defining a selected portion of a surface for refinish spray painting, comprising, in combination:

a flexible elongated strip of material having co-extensive first and second lateral portions disposed at an obtuse angle to each other such that when the first lateral portion is arranged to juxtapose the surface to be refinish painted the second lateral portion will overhang in spaced sloping relation the portion of such surface to be sprayed;

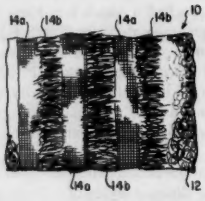
adhesion means overlying a surface of said first lateral portion for removably securing such portion in the aforesaid juxtaposition to a surface to be refinish painted, and

angle maintenance means for maintaining said angle between the fist and second lateral portion such that the angle of the overhang between the second lateral portion and the surface portion to be refinish painted is between approximately 15° and 45°, said angle maintenance means between the first and second lateral portions.

4,341,829
FABRIC AND METHOD OF MANUFACTURE USING SELVAGE BANDS

Kenneth A. Gold, 29 Wildwood Gardens, Port Washington, N.Y. 11050

Filed Feb. 6, 1980, Ser. No. 119,129
Int. Cl.[3] B32B 29/00
U.S. Cl. 428—53 13 Claims

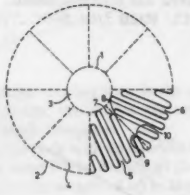


1. A non-woven fabric including as a primary component a fringed selvage band of the type obtained as a by-product of the manufacture of certain woven fabrics, said fabric further comprising a non-woven backing to which said selvage bands are secured by needling.

4,341,830
COMPOSITE STRUCTURE IN THE FORM OF A DISC OF KNITTED CARBON FIBERS

Max W. Betts, Coventry; Thomas R. Burrow, Earlsdon; Frank Robinson, Breaston, and Patrick A. White, Walsgrave, all of England, assignors to Courtaulds Limited, London, England

Continuation of Ser. No. 847,614, Nov. 1, 1977, abandoned. This application Jan. 11, 1980, Ser. No. 111,362
Claims priority, application United Kingdom, Nov. 3, 1976, 45817/76
Int. Cl.[3] B32B 3/02
U.S. Cl. 428—65 22 Claims



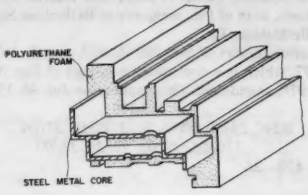
1. A fabric panel suitable for reinforcing a matrix material to provide a composite structure which comprises yarn of carbon fibres or oxidised fibres suitable as precursors for carbon fibres and is knitted in courses of varying length which give it the general shape of a disc with the wales lying substantially concentric with the circumference of the disc, and having one or more additional yarns of carbon fibres or oxidised fibres suitable as precursors for carbon fibres, laid in along at least some of the knitted courses.

4,341,831
SHAPES FOR WINDOWS OR DOORS

Joachim Kleiss, Dettelbach, Fed. Rep. of Germany, assignor to Fulgeritwerke Seelze und Eichriede in Luthe bei Hannover Adolf Oesterheld GmbH & Co. Kommanditgesellschaft, Wunstorf, Fed. Rep. of Germany

Filed May 4, 1981, Ser. No. 260,407
Int. Cl.[3] B32B 1/08, 1/10, 3/30, 15/08
U.S. Cl. 428—188 11 Claims

1. In a shape for windows and doors consisting of a hollow aluminum extruded shape with a plastic sheath made of polyurethane foam and having a primer consisting of an adhesive substrate between the surface of said aluminum shape and said polyurethane foam, the improvement comprising said primer



consisting of a compound of a resin selected from the group consisting of phenolic resin, polyvinylbutyral or a mixture thereof; pigment and acid.

4,341,832
SYNTHETIC CHAMOIS WIPING CLOTHS

Gary A. Barnett, Lyman, and James P. Shealy, Jr., Rock Hill, both of S.C., assignors to M. Lowenstein Corporation, New York, N.Y.

Filed May 29, 1981, Ser. No. 268,258
Int. Cl.[3] B32B 3/00
U.S. Cl. 428—196 21 Claims

1. A composite sheet material having the visual appearance, feel and drape of natural chamois leather, and excellent liquid absorption and retention comprising, in combination, a reinforcing textile fabric having opposed raised fiber surfaces, a soft water-absorbent porous polymeric acrylonitrile foam layer secured to each of the raised fiber faces of the textile fabric with the surface fibers of the fabric at least partially embedded therein, and wherein small discontinuous generally uniformly dispersed areas of the exposed porous surfaces of said foam layers are coated with a non-tacky, water-insoluble, film-forming polymer, said sheet material being characterized by no noticeable surface tack and an ability to absorb and retain liquid therein in an amount of at least about 300 percent of its dry weight.

4,341,833
FORGERY-RESISTANT FILM

Helmut Schäfer, Rüsselsheim, and Manfred Unger, Schlangenbad, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 84,551
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1978, 7832840[U]
Int. Cl.[3] B32B 7/02, 27/06, 27/36
U.S. Cl. 428—212 1 Claim

1. A film which offers protection against forgeries and is

suitable for marking articles, comprising a laminate comprised of two transparent films joined to one another over their surface, each of said films being oriented by stretching and being comprised of a polyester resin and in admixture therewith an organic dyestuff which is heat stable at temperatures above about 260° C., wherein one of the laminated transparent film layers comprises as the dyestuff anthraceno [2, l-m; 1,9 a-n; 9a, 9-a] thioxanthene and the other film layer comprises as the dyestuff N-(n-octadecyl)-benzo [k,l] thioxanthene-3,4-dicarboximide.

4,341,834

COATED SUPER-HARD ALLOY ARTICLES

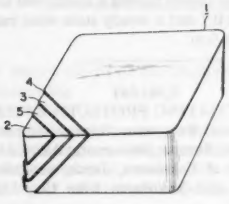
Noribumi Kikuchi, Omiy a; Yasuo Suzuki, Ageo; Taijiro Sugizawa, and Fumio Washizu, both of Tokyo, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 813,774, Jul. 7, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,737

Claims priority, application Japan, Jul. 10, 1976, 51-82261

Int. Cl.³ B32B *7/02*

U.S. Cl. 428—216 **4 Claims**



1. A coated super-hard alloy article consisting of a substrate and two layers as follows: a substrate of a super-hard alloy comprising at least one member selected from the group consisting of carbides, nitrides, and carbonitrides of metals of Groups 4a, 5a, and 6a, of the periodic table and at least one member selected from the group consisting of Fe, Ni, Co, W, Mo, and Cr; an intermediate, crystalline layer of a titanium oxycarbide as determined by X-ray diffraction, of the formula of from $TiC_{0.9}O_{0.1}$ to $TiC_{0.4}O_{0.6}$ formed with a thickness of 0.5 to 10 microns on the surface of the substrate by reacting thereon, at a temperature of 800° to 1,200° C., a halide of titanium, hydrogen, and a member selected from the group consisting of carbon monoxide, carbon dioxide, and mixtures of carbon monoxide and carbon dioxide; and an outer coating layer of aluminum oxide formed with a thickness of 0.5 to 5 microns on the outer surface of the intermediate layer.

3. A coated super-hard alloy article consisting of a substrate and three layers as follows: a substrate of a super-hard alloy comprising at least one member selected from the group consisting of carbides, nitrides, and carbonitrides of metals of Groups 4a, 5a, and 6a of the periodic table and at least one member selected from the group consisting of Fe, Ni, Co, W, Mo, and Cr; an inner layer consisting of at least one member selected from the group consisting of titanium carbide, titanium nitride and titanium carbonitride formed with a thickness of 0.5 to 10 microns on the surface of the substrate; an intermediate, crystalline layer of a titanium oxycarbide as determined by X-ray diffraction, of the formula of from $TiC_{0.9}O_{0.1}$ to $TiC_{0.4}O_{0.6}$ formed with a thickness of 0.5 to 5 microns on the outer surface of the inner layer by reacting thereon, at a temperature of 800° to 1,200° C., a halide of titanium, hydrogen, and a member selected from the group consisting of carbon monoxide, carbon dioxide, and mixtures of carbon monoxide and carbon dioxide; and an outer coating layer of aluminum oxide formed with a thickness of 0.5 to 5 microns on the outer surface of the intermediate layer.

4,341,835

MACROFILAMENT-REINFORCED COMPOSITES

John F. MacDowell, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 26, 1981, Ser. No. 228,195

Int. Cl.³ B32B *15/00*

U.S. Cl. 428—292 **6 Claims**

1. A composite article comprising a matrix phase and a high-aspect-ratio reinforcing phase, wherein the high-aspect-ratio reinforcing phase consists of multiple elongated, prestressed glass or glass-ceramic members having a minimum thickness in the range of about 0.010–1.00 inches, a minimum length: thickness ratio of at least about 10:1, and compressively stressed surface layers imparting to each of said members an abraded flexural modulus of rupture strength of at least 100,000 psi.

4,341,836

SURFACING FOR SPORTS AREAS, MORE PARTICULARLY TENNIS COURTS

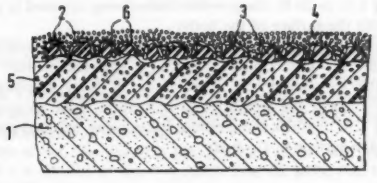
Heinz Becker, Gottfried-Keller-Str. 2, 6204 Taunusstein 1, Fed. Rep. of Germany

Continuation of Ser. No. 2,400, Jan. 10, 1979, abandoned. This application Sep. 23, 1980, Ser. No. 189,588

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1978, 2826206

Int. Cl.³ B32B *5/16*

U.S. Cl. 428—308.4 **11 Claims**



1. A surfacing for sports areas comprising:

a polyurethane bearing layer applied to a surface;

resilient rubber fragments embedded substantially two-thirds within the bearing surface at spaced locations relative to each other thus forming voids therebetween, the depth of said voids being about one-third or more of the size of said fragments; and

a top covering layer of fine rubber grains substantially entirely filling the voids.

4,341,837

LAMINAR THERMOPLASTIC RESIN STRUCTURE

Takayuki Katsuto; Shunzo Endo; Hideaki Doi, and Naohiro Murayama, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Japan

Filed Aug. 7, 1979, Ser. No. 64,626

Claims priority, application Japan, Aug. 11, 1978, 53-97217; Mar. 14, 1979, 54-29796

Int. Cl.³ B32B *27/36*

U.S. Cl. 428—336 **7 Claims**

1. A laminar thermoplastic resin structure comprising a plurality of thermoplastic resin layers, at least one adjacent pair of which is bonded to a layer of an ionically cross-linked maleinated block copolymer of a conjugated diene and an aromatic vinyl monomer having a maleic anhydride content of 0.1 to 10% by weight and said maleinated block copolymer being ionically cross-linked to a metal compound selected from the group consisting of oxides, hydroxides, organic acid salts and alkoxides of mono- or divalent metals, said thermoplastic resin layers bonded to a layer of the maleinated block copolymer comprising at least one resin selected from the group consisting

of polyvinylidene chloride resins, polyvinyl chloride resins, polyolefin resins, polyamide resins, polyester resins, polycarbonate resins and unsaturated nitrile resins.

4,341,838

MOLDING COMPOSITIONS AND DIAPHRAGMS, ARM PIPES AND HEAD SHELLS MOLDED THEREFROM

Kunio Imai, Tokorozawa; Tsunehiro Tsukagoshi, Tokyo; Shinichi Yokozeki, Tokyo; Toshikazu Yoshino, Tokyo, and Yasuyuki Arai, Tokyo, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 132,980

Claims priority, application Japan, Mar. 23, 1979, 54/033263; May 25, 1979, 54/063957

Int. Cl.³ B32B *27/30*

U.S. Cl. 428—338 **31 Claims**

1. A diaphragm for use in acoustic instruments comprising a shaped body of 10–90% by weight of a thermoplastic resin in a kneaded admixture with 90–10% by weight of a combination of flaky graphite and carbon black, the weight ratio of carbon black to graphite flakes being 1:10 to 20:10, the graphite flakes being oriented in parallel with the surface of the body.

8. An arm pipe comprising a shaped body of 10–90% by weight of a thermoplastic resin in a kneaded admixture with 90–10% by weight of a combination of flaky graphite and carbon black, the weight ratio of carbon black to graphite being 1:10 to 20:10, the graphite flakes being oriented in parallel with the surface of the body.

15. A head shell comprising a shaped body of 10–90% by weight of a thermoplastic resin in a kneaded mixture with 90–10% by weight of a combination of flaky graphite and carbon black, the weight ratio of carbon black to graphite being 1:10 to 20:10, the graphite flakes being oriented parallel with the surface of the body.

4,341,839

WATER AND SOLVENT RESISTANT COATED PAPER AND METHOD FOR MAKING THE SAME

Michael J. Shaw, Paw Paw, and Robert J. Thiessen, Richland, both of Mich., assignors to Allied Paper Incorporated, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 44,661, Jun. 1, 1979, abandoned, which is a division of Ser. No. 827,127, Aug. 24, 1977, abandoned. This application Dec. 17, 1980, Ser. No. 217,523

Int. Cl.³ B32B *21/06*

U.S. Cl. 428—342 **3 Claims**

1. A coated paper having improved solvent and water resistance comprising

(a) a paper base; and

(b) a formed coating on said paper base comprising a binding amount of a natural or synthetic hydrophobic binder and a filler at least a portion of which is an amount of plastic particles soluble in a solvent, said binding amount being at least about 10% based on the weight of filler, the plastic particles being present in sufficient amount and in a coalesced state in said coating to provide a substantially continuous plastic particle film;

(c) the coat weight being about 0.5–15 lbs./side/3,300 sq. ft. applied to at least one side;

(d) said particles having the property of being non-coalescible at ambient temperature and under the conditions of drying and finishing of the coated paper,

(e) said coating being free of materials which would adversely affect solvent and water resistance.

4,341,840

COMPOSITE BEARINGS, SEALS AND BRAKES

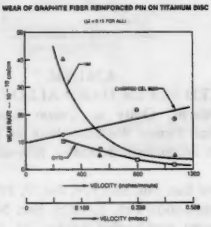
Karl M. Prewo, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 13, 1981, Ser. No. 243,317

The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.

Int. Cl.³ B32B *9/00*

U.S. Cl. 428—408 **5 Claims**



1. A bearing, seal or brake material comprising a graphite fiber reinforced glass matrix having a coefficient of friction of about 0.15 to about 0.7 and a steady state wear rate less than about 40×10^{-10} cm/cm.

4,341,841

MULTI-LAYER COATING PROTECTIVE FILM FORM

Akira Ohno; Shitomi Katayama; Suguru Nomura; Susumu Senaha; Suizo Kyo; Susumu Shimomura; Akira Akagami, and Hiroshi Imai, all of Yokohama, Japan, assignors to NHK Spring Co., Ltd. and Yokohama Kiko Co., Ltd., both of Kanagawa, Japan

Filed Nov. 13, 1979, Ser. No. 93,563

Claims priority, application Japan, Nov. 13, 1978, 53-138907

Int. Cl.³ G02B *5/08*; B32B *17/10, 15/08*

U.S. Cl. 428—414 **13 Claims**

1. A multi-layer coated article comprising a substrate and two protective layers, said substrate being sufficiently thermal resistant to withstand the conditions of vacuum deposition thereon and not evolving volatile substances when vacuum deposition is carried out thereon, said protective layers consisting of a vacuum-deposited crystalline layer of at least one thermally stable water-insoluble inorganic compound selected from the group consisting of metallic oxides, nitrides, borides, carbides and silicides and a hard abrasion resistant high bending resistant thermosetting resin layer capable of withstanding a vacuum-deposition operation thereon comprised of a cross-linked resin selected from the group consisting of epoxy resins, polyester resins, allyl resins, phenol resins and silicone resins, which protective layers are in any desired order.

4,341,842

METHOD OF COATING AUTOMOTIVE PARTS WITH SILICONE COMPOSITIONS

Warren R. Lampe, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,611

Int. Cl.³ B32B *15/08*

U.S. Cl. 428—450 **39 Claims**

1. A method of coating the underside of a metal automotive part with a room temperature vulcanizable silicone rubber composition comprising (1) applying to an automotive part a thin layer of a room temperature vulcanizable silicone rubber composition having (A) 100 parts of a silanol end-stopped diorganopolysiloxane polymer with a viscosity varying from 100 to 500,000 centipoise at 25° C. where the organo group is a monovalent hydrocarbon radical; (B) from 0.1 to 15 parts by weight of an alkyl silicate of the formula,

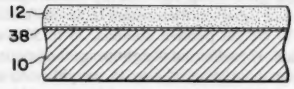
$R_aSi(OR^1)_{4-a}$

and partial hydrolysis products of the silicate where R and R^1 are monovalent hydrocarbon radicals, a is 0 or 1 and (C) from 0.01 to 5 parts by weight of an effective metal salt of a carboxylic acid and (2) allowing the layer of silicone rubber composition to cure at room temperature to a silicone elastomer.

4,341,843
REFRACTORY COATINGS

William A. Brainard, Berea, and Donald R. Wheeler, Bay Village, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 102,003, Dec. 7, 1979. This application Sep. 29, 1980, Ser. No. 191,746
Int. Cl.³ C23C *15/00*
U.S. Cl. 428—457 **1 Claim**



1. A hard coated article of manufacture having improved properties comprising
   a steel substrate, and
   a sputtered coating of titanium carbide on said steel substrate, said coating consisting essentially of
   an interfacial region in contact with said steel substrate containing of mixture of titanium nitride and iron nitride, and
   a titanium carbide film covering said inner facial region, said film being substantially free of said nitrides whereby said interfacial region provides improved adhesion of said titanium carbide film to said steel substrate.

4,341,844
ARTICLE HAVING ORGANO-PHOSPHONITRILE RUBBER COATING BONDED TO NATURAL OR SYNTHETIC RUBBER AND METHOD OF MAKING

Koon-Wah Leong, Schaumberg, Ill., assignor to The Kendall Company, Boston, Mass.

Division of Ser. No. 88,157, Oct. 25, 1979, Pat. No. 4,311,736, which is a continuation-in-part of Ser. No. 21,336, Mar. 19, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,298
Int. Cl.³ B32B *25/08*; A61F *7/12*; B32B *27/08*
U.S. Cl. 428—492 **5 Claims**

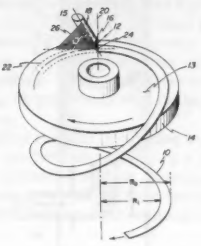
1. A cured article of natural or synthetic rubber having on its surface a primer coating comprising a cross-linked di- or polyvinyl compound, and an outer coating comprising a cured organo-phosphonitrile polymer containing randomly distributed repeating units having the structures:

wherein A represents RO—, RNH—, $X(CF_2)_mCH_2O$—, or $X(CF_2)_m$ CH_2NH—and B represents R'O, R'NH, $Y(CF_2)_nC$-H_2O—, or $Y(CF_2)n$ CH_2NH—, R and R' each being selected from the group consisting of lower alkyl and aryl such phenyl, tolyl, chlorophenyl, X and Y each being selected from the group consisting of hydrogen and fluorine, and m and n each being an integer from 1 to 8 inclusive, said outer coating being bonded to said article by said primer coating.

4,341,845
HELICAL METALLIC RIBBON FOR CONTINUOUS EDGE WINDING APPLICATIONS

Howard H. Liebermann, Schenectady; Peter G. Frischmann, Scotia, both of N.Y., and George M. Rosenberry, Jr., Hendersonville, Tenn., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,239
Int. Cl.³ B21C *37/00*; B21F *3/00*
U.S. Cl. 428—592 **7 Claims**



1. A continuous length of cast edge-wound metallic ribbon having a helical shape, a pair of substantially parallel opposed major surfaces, an inner peripheral edge and an outer peripheral edge.

4,341,846
PALLADIUM BORON PLATES BY ELECTROLESS DEPOSITION ALLOY

William V. Hough, Butler; John L. Little, Evans City, and Kevin E. Warheit, Butler, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Division of Ser. No. 165,479, Jul. 3, 1980, Pat. No. 4,279,951, which is a division of Ser. No. 3,351, Jan. 15, 1979, Pat. No. 4,255,194. This application Feb. 2, 1981, Ser. No. 230,522
Int. Cl.³ C23C *3/02*
U.S. Cl. 428—670 **2 Claims**

1. A palladium alloy plate electrolessly deposited on a catalytically active substrate and consisting of about 1 to 3% by weight of amorphous boron, about 1 to 3% by weight of crystalline Pd or intermetallic compounds of palladium and hydrogen, the remainder being amorphous palladium.

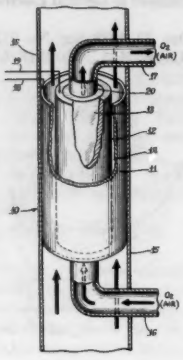
4,341,847
ELECTROCHEMICAL ZINC-OXYGEN CELL

Anthony F. Sammells, Naperville, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Oct. 14, 1980, Ser. No. 196,749
Int. Cl.³ H01M *4/00*
U.S. Cl. 429—27 **12 Claims**

1. An electrochemical zinc-oxygen cell comprising:
   a tubular catalyst containing oxygen diffusion cathode which is electrically conducting and oxygen porous, said tubular cathode providing a tubular through passage open at each end;
   a concentric tubular ion conducting separator surrounding and in ionic contact with said oxygen cathode;
   a concentric tubular electrically conducting anode spaced radially from and surrounding said separator forming an annular electrolyte space between said separator and said anode, said annular electrolyte space providing an annular through passage open at each end;
   means for pressurizing and passing oxygen containing gas through and in contact with the central portion of said tubular oxygen diffusion cathode, said oxygen containing gas entering at one end and exiting at the other end of said tubular through passage;
   means for passing liquid electrolyte through said annular

electrolyte space in ionic contact with said ion conducting separator and said anode, said electrolyte entering at one end and exiting at the other end of said annular through passage and;



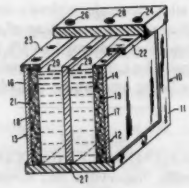
an anode active zinc material in contact with said electrolyte.

4,341,848

BIFUNCTIONAL AIR ELECTRODES CONTAINING ELEMENTAL IRON POWDER CHARGING ADDITIVE

Chia-tsun Liu, Monroeville; Brian G. Demczyk, Rostrover Township, Westmoreland County, and Paul R. Gongaware, Penn Township, Westmoreland County, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 5, 1981, Ser. No. 240,659
Int. Cl.³ H01M *4/00*
U.S. Cl. 429—27 **10 Claims**



1. A bifunctional air electrode for use in electrochemical energy cells comprising:

A. a hydrophilic layer consisting essentially of:

(1) a hydrophilic composite comprising:

i. about 1 part by weight of carbon particles having a total surface area of from about 30 to about 1,500 sq. meters/gram, where at least about 50 wt.% of the carbon particles have a total surface area of from about 30 to about 300 sq. meters/gram;

ii. about 0.1 to about 1 part by weight of elemental iron particles having a particle size of between about 25 microns and about 700 microns diameter;

iii. up to about 1 part by weight of an oxygen evolution material;

iv. an effective amount of a bonding/nonwetting agent; and

v. an effective amount of a catalyst for oxygen reduction and decomposition of perhydroxides; and

(2) at least one metal current collector formed into said composite to provide a hydrophilic layer, and

B. a hydrophobic layer pressed to said hydrophilic layer.

4,341,849

SODIUM RESISTANT SEALING GLASSES AND SODIUM-SULFUR CELLS SEALED WITH SAID GLASSES

Dong-Sil Park; Manfred W. Breiter, both of Schenectady; Bruce S. Dunn, Saratoga Springs, and Louis Navias, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 99,597, Dec. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 954,177, Oct. 24, 1978, abandoned. This application Mar. 2, 1981, Ser. No. 239,751
Int. Cl.³ H01M *10/36*; C03C *3/14*
U.S. Cl. 429—104 **3 Claims**

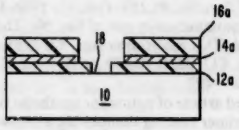
1. In a sodium-sulfur cell having an electrically insulating alpha alumina ceramic supporting a solid ion-conductive ceramic electrolyte selected from the group consisting of beta-alumina, beta"-alumina and mixtures thereof, the improvement consisting of a sodium resistant aluminoborate sealing glass sealing said alpha alumina ceramic to said ceramic electrolyte, said sealing glass being significantly stable against interfacial reactions and significantly resistant to devitrification consisting of 10 to 30 weight percent alumina, 35 to 50 weight percent boron oxide, 15 to 40 total weight percent of a mixture of alkali earth oxides consisting of 2 to 15 weight percent of calcium oxide, 2 to 15 weight percent of barium oxide and 2 to 15 weight percent of strontium oxide, 0 to 20 weight percent of silica, and 0 to 5 weight percent of a mixture of alkali metal oxides of sodium oxide, lithium oxide, and potassium oxide.

4,341,850

MASK STRUCTURE FOR FORMING SEMICONDUCTOR DEVICES, COMPRISING ELECTRON-SENSITIVE RESIST PATTERNS WITH CONTROLLED LINE PROFILES

Philip J. Coane, Mahopac, N.Y., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 59,010, Jul. 19, 1979, Pat. No. 4,283,483. This application Feb. 2, 1981, Ser. No. 230,186
Int. Cl.³ H01L *21/312*
U.S. Cl. 430—11 **6 Claims**



1. A mask structure formed on the surface of a chosen substrate for defining a predetermined region on and above said surface of said substrate comprising:

(a) a bottom layer of an electron-beam sensitive resist material formed on the surface of said substrate;

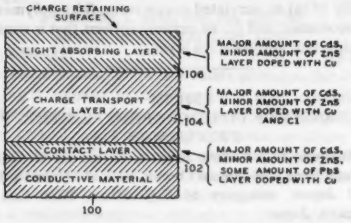
(b) a relatively thin layer of a chosen conductive material deposited on said bottom layer of said resist; and

(c) a top layer of said resist material deposited on said conductive layer to form a composite resist/conductor/resist structure, said composite structure having an opening with a T-shaped profile formed therein by a process comprising exposure to said electron beam as the sole resist-exposing means, and with the base of said "T" adjacent said surface of said substrate, to form a mask which defines said region of said substrate, said region having said T-shaped profile.

4,341,851
ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR COMPRISING CdS AND ZnS

John B. Mooney, Saratoga, and Ivor Brodie, Palo Alto, both of Calif., assignors to Savin Corporation, Valhalla, N.Y.

Continuation-in-part of Ser. No. 147,704, May 8, 1980, abandoned. This application Feb. 23, 1981, Ser. No. 236,739
Int. Cl.³ G03G 5/082
U.S. Cl. 430—56 12 Claims


CHARGE RETAINING SURFACE
LIGHT ABSORBING LAYER
MAJOR AMOUNT OF CdS, MINOR AMOUNT OF ZnS LAYER DOPED WITH Cu
106
CHARGE TRANSPORT LAYER
MAJOR AMOUNT OF CdS, MINOR AMOUNT OF ZnS LAYER DOPED WITH Cu AND Cl
104
CONTACT LAYER
MAJOR AMOUNT OF CdS, MINOR AMOUNT OF ZnS, SOME AMOUNT OF PbS LAYER DOPED WITH Cu
102
CONDUCTIVE MATERIAL
100

1. An electrophotographic photoconductor including in combination a conductive substrate having formed thereon a layer of a homogeneous alloy of metal sulphides approximately at least three microns thick, said layer comprising a major amount of cadmium sulphide and a minor amount of zinc sulphide.

3. An electrophotographic photoconductor including in combination a conductive substrate having formed thereon a layer of metal sulphides approximately at least three microns thick, said layer comprising a major amount of cadmium sulphide and a minor amount of zinc sulphide, said layer having a zone adjacent said conductive substrate, said zone containing an amount of lead sulphide.

6. An electrophotographic photoconductor including in combination a conductive substrate having pyrolytically formed thereon a layer of metal sulphides from an aqueous solution of major amounts of thiourea and cadmium acetate and a minor amount of zinc acetate, said layer having a thickness of approximately at least three microns, said layer being doped with copper.

4,341,852
POLYCYANOANTHRACENES AND USE AS SENSITIZERS FOR ELECTROPHOTOGRAPHIC COMPOSITIONS

Susan L. Mattes, and Samir Y. Farid, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1980, Ser. No. 193,062
Int. Cl.³ G03G 5/09, 5/06; C07C 121/64
U.S. Cl. 430—83 5 Claims

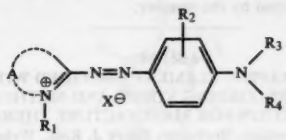
1. An electrically insulating organic photoconductive composition comprising an electron donor organic photoconductor and a sensitizing amount of a polycyanoanthracene containing three or more cyano groups.

4,341,853
SPECTRAL SENSITIZATION OF ORGANIC PHOTOCONDUCTORS WITH DIAZASTRYL DYES

Seiji Horie, and Hideo Sato, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

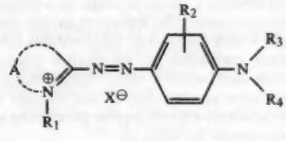
Filed Dec. 3, 1980, Ser. No. 212,652
Claims priority, application Japan, Dec. 3, 1979, 54-155592
Int. Cl.³ G03G 5/04
U.S. Cl. 430—83 11 Claims

1. A photoconductive composition comprising an organic photoconductive substance and a spectral sensitizer represented by formula (I)


(I)

wherein R_1 represents an alkyl group, R_2 represents hydrogen, an alkyl group or an alkoxy group, R_3 and R_4 each represent an alkyl group, or R_3 and R_4 together represent a group completing a nitrogen-containing heterocyclic group, and A represents a group completing a (a) benzothiazolium ring, (b) thiazolium ring, (c) imidazolium ring, (d) triazolium group, (e) thiadiazolium ring, (f) pyridinium ring, (g) indazolium ring, or (h) indolenium ring.

7. A photosensitive material comprising a photoconductive composition said composition comprising a photoconductive substance and a spectral sensitizer, provided on a base, or comprising a membrane produced from said photoconductive composition, wherein said spectral sensitizer is represented by formula (I)

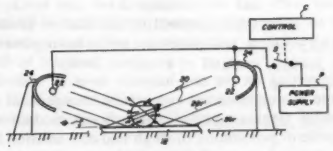

(I)

wherein R_1 represents an alkyl group, R_2 represents hydrogen, an alkyl group, or an alkoxy group, R_3 and R_4 each represent an alkyl group or R_3 and R_4 together represent a group completing a nitrogen-containing heterocyclic group, and A represents a group completing a (a) benzothiazolium ring, (b) thiazolium ring, (c) imidazolium ring, (d) triazolium ring, (e) thiadiazolium ring, (f) pyridinium ring, (g) indazolium ring or (h) indolenium ring.

4,341,854
METHOD FOR FLASH FUSING TONER IMAGES

Wei C. Lu, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,492
Int. Cl.³ B05B 5/00; H05B 11/00
U.S. Cl. 430—124 3 Claims



1. Method of fusing dry resinous marking particles supported on the surface of an energy reflective receiver member by sufficiently irradiating the particles with energy from a source to at least partially melt the particles at the interface between the particles and receiver member so that the particles adhere to the receiver member, said method including the step of:

directing irradiating energy toward the surface of the particles and the receiver member from opposite sides and along a path having a major low-angle component relative to the member to irradiate the particles, over a substantial portion of their surface area, with energy which has not

been reflected by the member and with energy which has been reflected by the member.

4,341,855

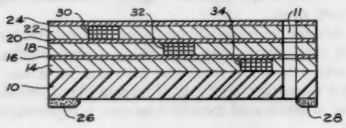
PHOTOGRAPHIC ELEMENT PROVIDED WITH A MAGNETIC RECORDING STRIPE AND METHOD AND COMPOSITION FOR MANUFACTURE THEREOF

Edward D. Morrison, Rochester; Harry J. Krall, Webster; David L. Carr, Fairport, and Chen-i Lu, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 40,605, May 18, 1979, abandoned. This application Jun. 18, 1980, Ser. No. 160,759

Int. Cl.³ C04B *35/04*

U.S. Cl. 430—140 **35 Claims**



1. A method of forming a magnetic stripe on a photographic element, said element comprising a support having thereon an anti-halation layer which contains an alkali-soluble binder that renders such layer removable by an alkaline photographic processing solution, said magnetic stripe being composite with said anti-halation layer and bonded to said support so as to resist removal by an alkaline photographic processing solution, which method comprises the steps of:

(1) depositing on the anti-halation layer of said element a stripe of a composition comprising a suspension of finely-divided magnetic particles in a liquid medium which is capable of penetrating through said anti-halation layer and being cured to an alkali-insoluble cross-linked polymeric matrix which surrounds said magnetic particles and bonds to said support, said liquid medium, consisting essentially of (a) an acrylated epoxy resin, (b) a polymerizable acrylic monomer, and (c) an organic solvent that is capable of solubilizing said anti-halation layer, and

(2) curing said stripe to convert said liquid medium to an alkali-insoluble cross-linked polymeric matrix which surrounds said magnetic particles and bonds to said support, thereby forming a magnetic stripe which is composite with said anti-halation layer and resistant to removal by alkaline photographic processing solutions.

14. A photographic element comprising a support, an anti-halation layer on said support which contains an alkali-soluble binder that renders such layer removable by an alkaline photographic processing solution, and a magnetic stripe which is composite with said anti-halation layer and bonded to said support so as to resist removal by an alkaline photographic processing solution, said magnetic stripe having been formed by:

(1) depositing on the anti-halation layer of said element a stripe of a composition comprising a suspension of finely-divided magnetic particles in a liquid medium which is capable of penetrating through said anti-halation layer and being cured to an alkali-insoluble cross-linked polymeric matrix which surrounds said magnetic particles and bonds to said support, said liquid medium consisting essentially of (a) an acrylated epoxy resin, (b) a polymerizable acrylic monomer, and (c) an organic solvent that is capable of solubilizing said anti-halation layer, and

(2) curing said stripe to convert said liquid medium to an alkali-insoluble cross-linked polymeric matrix which surrounds said magnetic particles and bonds to said support, thereby forming a magnetic stripe which is composite with said anti-halation layer and resistant to removal by alkaline photographic processing solutions.

26. A coating composition which is useful for forming a magnetic stripe on a photographic element comprising a support and an anti-halation layer, said anti-halation layer containing an alkali-soluble binder that renders said layer removable by an alkaline photographic processing solution and said magnetic stripe being composite with said anti-halation layer and bonded to said support so as to resist removal by an alkaline photographic processing solution, said coating composition comprising a suspension of finely-divided magnetic particles in a liquid medium which is capable of penetrating through said anti-halation layer and being cured to an alkali-insoluble cross-linked polymeric matrix which surrounds said magnetic particles and bonds to said support, said liquid medium consisting essentially of (a) an acrylated epoxy resin, (b) a polymerizable acrylic monomer, and (c) an organic solvent that is capable of solubilizing said anti-halation layer.

4,341,856

PHOTOSENSITIVE LITHOGRAPHIC PRINTING PLATE PRECURSORS

Tadao Toyama; Sho Nakao; Keisuke Shiba, all of Shizuoka; Hidefumi Sera, and Masasi Ogawa, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 23, 1981, Ser. No. 237,057

Claims priority, application Japan, Feb. 22, 1980, 55/21372

Int. Cl.³ G03C *1/76;* **G03F** *7/02*

U.S. Cl. 430—156 **13 Claims**

1. A photosensitive lithographic printing plate precursor, comprising:

a support having a hydrophilic surface and having thereon a non-silver photosensitive layer capable of forming a water-insoluble oleophilic image and a hardened gelatino silver halide photosensitive emulsion layer on said non-silver photosensitive layer, wherein;

said photosensitive emulsion layer is hardened to an extent that the dissolution time in a 0.01 weight % aqueous solution of a protease (1,000,000 tyrosine units/g) at 40° C. is 7 to 150 seconds.

4,341,857

PHOTOGRAPH FILM UNIT

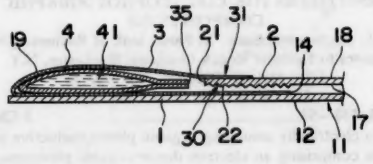
Nanao Aoki, Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 23, 1980, Ser. No. 162,234

Claims priority, application Japan, Jun. 27, 1979, 54-81927

Int. Cl.³ G03B *17/50;* **G03C** *1/42*

U.S. Cl. 430—207 **4 Claims**



1. A photograph film unit comprising a sensitive first sheet having a picture border surrounding an image area, a second sheet having a leading cross edge portion and being superposed on the first sheet in face-to-face relation, and a processing liquid container being disposed on one end portion of said first sheet and of said second sheet, near the second sheet's cross edge portion, to supply a processing liquid between the first sheet and the second sheet, characterized in that a bumpy strip is formed near and parallel to the leading cross edge portion of the second sheet, on at least one face of the mutually opposite faces between the first sheet and the second sheet, in a zone extending only from the cross edge portion of the second sheet on the side of said treating liquid container to the edge portion of the image area of the first sheet, whereby said bumpy strip forms a dam for catching any air trapped between the sheets

when said container is ruptured and the processing liquid is spread through said zone toward said image area, thereby preventing the air from reaching the image area.

4,341,858

IMAGE-TRANSFER REVERSAL EMULSIONS AND ELEMENTS WITH INCORPORATED QUINONES

Eleanor Chaffee, Webster, and Richard C. Tuites, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 1, 1981, Ser. No. 259,790

Int. Cl.³ G03C *7/00, 1/40, 1/10*

U.S. Cl. 430—217 **13 Claims**

1. In a radiation-sensitive silver halide photographic element comprising a support having thereon a layer comprising a redox dye-releasing compound and having associated therewith an internal latent image silver halide emulsion and a nucleating amount of a hydrazine compound, the improvement wherein said silver halide layer comprises a nucleation-promoting amount of a quinone oxidizing agent.

2. In a radiation-sensitive diffusion transfer silver halide photographic film unit:

(a) a layer comprising a redox dye-releasing compound,

(b) a dye image-receiving layer and

(c) a layer comprising a binder, internal latent image silver halide emulsion and a nucleating amount of a hydrazine compound,

the improvement wherein said silver halide layer comprises a nucleation-promoting amount of a quinone oxidizing agent.

4,341,859

EMULSION FOR MAKING DRY FILM RESISTS

John J. Keane, Ballston Lake, and Richard F. Zopf, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 23, 1980, Ser. No. 190,029

Int. Cl.³ G03C *1/68*

U.S. Cl. 430—270 **10 Claims**

1. A homogeneous self-sustaining emulsion of coating viscosity useful for the manufacture of photo-polymerizable resist films comprising:

(i) colloidal droplets of a solution in a solvent comprising acetone, methylene chloride, methylformate, or propylene carbonate of a polyaryl iodonium or sulfonium salt of a complex halogenide latent catalyst dispersed in a continuous aqueous phase containing

(ii) a water-soluble normally solid polyvinyl alcohol as latent film-forming component, and

(iii) an effective amount of a water soluble thermo-setting polymethylol compound to cross-link said polyvinyl alcohol to water-insoluble state at elevated temperature therefor,

the amount of said catalyst being sufficient to catalyze the cross-linking action of said polymethyol compound when said emulsion is dried and irradiated with ultraviolet light at said temperature.

4,341,860

PHOTOIMAGING COMPOSITIONS CONTAINING SUBSTITUTED CYCLOHEXADIENONE COMPOUNDS

Peter K. Sysak, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

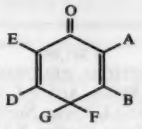
Filed Jun. 8, 1981, Ser. No. 271,241

Int. Cl.³ G03C *1/52, 1/68*

U.S. Cl. 430—277 **17 Claims**

1. A photoimaging composition comprising an admixture of

(A) a cyclohexadienone compound of the formula:



wherein each of A, B, D and E can be hydrogen, an alkyl group of 1 to 9 carbon atoms, bromo, chloro, an aryl group of 6 to 10 carbon atoms, an aralkyl group wherein the aryl moiety is of 6 to 10 carbon atoms and the alkyl moiety is of 1 to 5 carbon atoms, an alkaryl group wherein the aryl moiety is of 6 to 10 carbon atoms and the alkyl moiety is of 1 to 5 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, and A and B and D and E when taken together may form a benzene ring: F is CCl_3 or $CHCl_2$; and G can be an alkyl group of 1 to 18 carbon atoms and an aryl group of 6 to 10 carbon atoms; and

at least one compound taken from the group consisting of (B_1) a leuco dye that is oxidizable to dye by the cyclohexadienone compound; and (B_2) an addition polymerizable ethylenically unsaturated monomeric compound.

4,341,861

AQUEOUS DEVELOPABLE POLY(OLEFIN SULFONE) TERPOLYMERS

Thomas R. Pampalone, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 23, 1980, Ser. No. 219,517

Int. Cl.³ G03F *7/10*

U.S. Cl. 430—296 **8 Claims**

1. A method of forming a patterned layer on a substrate comprising:

(a) coating said substrate with a composition comprised of a terpolymer of a monomer component and sulfur dioxide in a 1:1 molar ratio, said monomer component being comprised of from about 70 to about 93 mole percent 3-methylcyclopentene and from about 7 to about 30 mole percent 3-cyclopentene-1-acetic acid, said terpolymer having a molecular weight of from about 250,000 to about 1,000,000 and a molecular weight distribution of less than 4, and a suitable solvent therefor;

(b) drying said coating to form an aqueous developable recording medium;

(c) exposing selected portions of said medium to electron beam irradiation; and

(d) developing the exposed portions of said medium with an aqueous alkaline developer.

4,341,862

VESICULAR RECORDING MATERIALS

Stuart G. Clarke, Colchester, and William A. Craig, Capel St. Mary, both of England, assignors to Bexford Limited, London, England

Filed Jan. 19, 1981, Ser. No. 226,022

Claims priority, application United Kingdom, Jan. 24, 1980, 8002474

Int. Cl.³ G03C *1/76*

U.S. Cl. 430—327 **8 Claims**

1. A process for the production of a vesicular recording material, which comprises producing a plastics vehicle comprising a thermoplastics component having dispersed uniformly therein a sensitising agent which releases a vesicle-forming gas upon exposure to light, said thermoplastics components being water-insoluble and softenable upon heating to permit the gas released insoluble and softenable upon heating to permit the gas released by the sensitising agent in the light-struck areas to form light-scattering or reflecting vesicles therein, wherein a layer of an aqueous medium is applied to the surface of the plastics vehicle, and the wet recording material is wound into a roll, the wound wet recording material then

being maintained at a temperature in the range 5° to 30° C. for at least 45 minutes.

4,341,863
ARCHIVAL OPTICAL RECORDING MEDIUM
Nicholas F. Borrelli, Elmira; Arthur J. Whitman, Horseheads, both of N.Y.; and Peter L. Young, North Wales, Pa., assignors to Corning Glass Works, Corning, N.Y.
Filed Sep. 25, 1980, Ser. No. 190,519
Int. Cl.³ G03C 1/28
U.S. Cl. 430—346 7 Claims

1. An optical information storage medium which includes a light-sensitive film in the form of a layer containing a polycrystalline deposition product of silver, lead, chlorine and oxygen, produced by vapor-depositing AgCl and PbO in proportions of about 30–70% PbO and 30–70% AgCl by weight, as calculated on the total weight of the film, on a substrate.

4,341,864
PHOTOGRAPHIC ELEMENTS CONTAINING CYAN-FORMING COUPLERS
Jan J. Vandewalle; Marcel J. Monbaliu, both of Mortsel, and Raphaël K. Van Poucke, Berchem, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium
Filed Mar. 12, 1981, Ser. No. 243,039
Claims priority, application United Kingdom, Apr. 9, 1980, 8011694
Int. Cl.³ G03C 1/76, 1/40
U.S. Cl. 430—505 6 Claims

6. Photographic multilayer colour element comprising at least three silver halide emulsion layers, which are differently optically sensitized, a red-sensitized silver halide emulsion layer thereof or a non-light-sensitive colloid layer in water-permeable relationship therewith incorporating at least one phenol-type colour coupler capable of forming a cyan indoaniline dye by reaction with an oxidized aromatic primary amino developing agent and comprising a fluorine-containing alkylcarbonamido group, wherein said fluorine-containing alkylcarbonamido group is a 3-chloro-2,2,3-trifluoro-propionamido group in the 2-position of the phenol.

4,341,865
DETERMINATION OF THYROXINE BINDING GLOBULIN
Houston F. Voss, Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Jul. 21, 1980, Ser. No. 170,361
Int. Cl.³ G01N 33/54
U.S. Cl. 435—7 4 Claims

1. A method for measuring unsaturated thyroxine binding globulin in serum comprising:
(a) intermixing with the serum (i) thyroxine irreversible enzyme inhibitor conjugate which binds to the unsaturated thyroxine binding globulin thereby inactivating the irreversible enzyme inhibitor portion of the conjugate (ii) an enzyme which is irreversibly inhibited by the thyroxine irreversible enzyme inhibitor conjugate unbound by the thyroxine binding globulin and (iii) a substrate for the enzyme;
(b) monitoring the enzyme substrate reaction to obtain test results; and
(c) comparing test results with a reference.

4,341,866
ANTIENZYME TERMINATION IN ENZYME IMMUNOASSAYS
Robert A. Yoshida, San Diego, Calif., assignor to Syva Company, Palo Alto, Calif.
Filed Jun. 2, 1980, Ser. No. 155,367
Int. Cl.³ G01W 33/54; C12W 9/99
U.S. Cl. 435—7 9 Claims

1. In an enzyme immunoassay for haptens employing enzyme-hapten conjugates, where said enzyme is NAD or NADP dependent with the amount of antihapten binding to the hapten being related to the amount of hapten in a sample added to an assay medium, and determining the amount of hapten by analyzing for the change in concentration of an enzyme cofactor which is NAD, NADP or the reduced form thereof,
wherein the assay is performed by combining said sample, said enzyme-hapten conjugate, a hapten receptor, and an enzyme substrate resulting in said enzyme cofactor, in an aqueous buffered medium; and allowing sufficient time for transformation of said enzyme substrate;
the improvement which comprises:
quenching said transformation by the addition of antienzyme to the assay medium at the end of said sufficient time.

4,341,867
PROCESS FOR RECOVERING ENZYMES FROM BLOOD
Jack T. Johansen, Rungsted Kyst, Denmark, assignor to De Forende Bryggerier A/S, Copenhagen, Denmark
Filed May 13, 1980, Ser. No. 149,393
Claims priority, application Denmark, Apr. 21, 1980, 1688/80
Int. Cl.³ C12N 9/02, 9/08, 9/88
U.S. Cl. 435—189 6 Claims

1. A process for recovery one or more of the enzymes Cu,Zn-superoxide dismutase (SOD), catalase and carbonic acid anhydrase from blood by lysing the blood cells and isolating the desired enzymes from the solution obtained, characterized by admixing wholly or partly isolated blood cells with an alkanol having 2 to 4 carbon atoms until a concentration of 10 to 70% by volume and allowing them to stand for hemolysis of the blood cells and denaturation of the hemoglobin and then adding water in an amount so as at least approximately to double the volume of the mixture, removing the precipitate of cell residuals, hemoglobin and other denatured proteins from the suspension, and finally isolating the desired enzymes from the solution obtained.

4,341,868
METHOD AND TEST COMPOSITION FOR THE DETERMINATION OF THE SUBSTRATE FOR XANTHINE OXIDASE
Toru Nakanishi, Atsugi, and Yozo Machida, Machida, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
Filed Apr. 18, 1980, Ser. No. 201,067
Claims priority, application Japan, Aug. 18, 1978, 53-100784; Feb. 10, 1979, 54-13828; PCT Int'l Appl., Aug. 17, 1979, PCT/JP79/00219
Int. Cl.³ C12N 9/06; C12Q 1/26; C12R 1/01
U.S. Cl. 435—191 17 Claims

1. Xanthine oxidase having the following enzymological properties:
(1) Staple pH range: 6.2–6.8
(2) Optimum pH: about 7.1
(3) Optimum temperature: 35°–45° C.
(4) Molecular weight: 128,000
(5) Best acceptor of the enzyme: oxygen.

15. A process for producing xanthine oxidase which comprises culturing a microorganism belonging to the genus Enterobacter and capable of producing xanthine oxidase in a nutrient medium, forming xanthine oxidase in the culture liquor and recovering the same therefrom.

4,341,869

PROCESS FOR PRODUCING HEPARINASE

Robert S. Langer, Jr., Cambridge; Robert Linhardt, Somerville; Charles L. Cooney, Brookline, and Parrish M. Galliher, West Newton, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 25, 1980, Ser. No. 180,780
Int. Cl.[3] C12N 9/88
U.S. Cl. 435—232 4 Claims

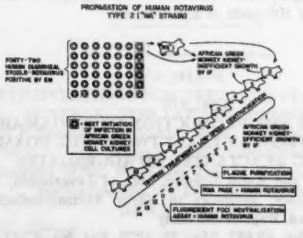
1. In a process for producing purified heparinase by growing *Flavobacterium heparinum* in a growth medium until heparinase is formed, the improvement which comprises admixing an extract of the *Flavobacterium heparinum* containing heparinase intimately with between about 5 and 15 weight percent hydroxylapatite based upon the weight of the mixture to bind said heparinase to said hydroxylapatite, recovering said hydroxylapatite containing bound heparinase and, recovering said bound heparinase by elution and wherein said growth medium is free of protein and yeast extract.

4,341,870

CULTIVATABLE HUMAN ROTAVIRUS TYPE 2

Richard G. Wyatt, Potomac; Walter D. James, Beltsville, both of Md.; Edward H. Bohl, Wooster, Ohio; Kenneth W. Theil, Wooster, Ohio; Linda J. Saif, Wooster, Ohio; Anthony R. Kalica, Rockville, Md.; Harry B. Greenberg, Washington, D.C.; Albert Z. Kapikian, Rockville, Md., and Robert M. Chanock, Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Department of Health & Human Services, Washington, D.C.

Filed Nov. 19, 1980, Ser. No. 208,389
Int. Cl.[3] C12N 7/08; A61K 39/12
U.S. Cl. 435—237 2 Claims



1. A precursor for a diarrhea vaccine which is a human rotavirus type 2 prepared by a method of cultivation of the Wa strain of human rotavirus type 2 through eleven passages in vivo using gnotobiotic piglets, then taking that virus and passing it through 14 to 25 passages in vitro in African green monkey kidney cell cultures; and wherein prior to each of said kidney cell cultures the rotavirus is treated with an effective amount of trypsin and where at each passage the tissue culture inoculated with rotavirus is subjected to low force centrifugation.

4,341,871

ACTIVE DRIED BAKER'S YEAST

Arend Langejan, and Basile Khoudokormoff, both of Delft, Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Continuation of Ser. No. 945,440, Sep. 25, 1978, abandoned, which is a continuation of Ser. No. 836,436, Sep. 25, 1977, abandoned, which is a continuation of Ser. No. 627,836, Nov. 3, 1975, abandoned, which is a continuation of Ser. No. 463,207, Apr. 23, 1974, abandoned, which is a continuation of Ser. No. 133,436, Apr. 12, 1971, abandoned. This application Apr. 24, 1981, Ser. No. 257,241
Claims priority, application United Kingdom, Apr. 14, 1970, 17795/70
The portion of the term of this patent subsequent to Nov. 23, 1993, has been disclaimed.
Int. Cl.[3] C12N 1/18; A21D 2/00
U.S. Cl. 435—256 5 Claims

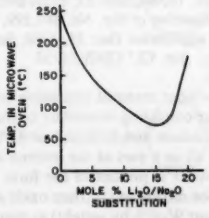
1. An active dried bakers' yeast having a protein content of 47 to 60% (% N×6.25, as determined by the Kjeldahl method) based on dry matter content, said dried yeast being obtained from a compressed yeast selected from the group consisting of Ng 2031 and Ng 2103 and having a dry matter content of at least 85% by weight, which exhibits (a) an activity of at least 510 when determined by the test procedure consisting of mixing a quantity of the active dried yeast corresponding to 450 mg of dry matter with 100 g of flour and adding 55 ml of an aqueous solution containing 2 g of sodium chloride and thereafter mixing the mass for 6 minutes at 28° C., maintaining the dough obtained at 28° C. and measuring the activity as the volume of gas in ml at 28° C. and 760 mm Hg evolved in the period from 10 to 175 minutes after the start of mixing the dough; and (b) an activity of at least 385 when measured by the test procedure consisting of maintaining a quantity of the active dried yeast corresponding to 450 mg of dry matter in contact with 8 ml of water for 10 minutes at 28° C., mixing the suspension obtained with 100 g of flour and 47 ml of an aqueous solution containing 2 g of sodium chloride, and thereafter mixing the mass and measuring the activity in the manner specified above, the said yeast being dried by dividing a fresh compressed yeast into particles and drying the particles to a dry matter content of at least 85% by weight by passing therethrough a drying gas at a temperature of not more than 160° C. in not more than 120 minutes with a drying gas flow so that the temperature of the yeast particles are held within a temperature range of 20° to 50° C.

4,341,872

MICROWAVE-COMPATIBLE NEPHELINE GLASS-CERAMICS

John F. MacDowell, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 5, 1981, Ser. No. 270,870
Int. Cl.[3] C03C 3/22
U.S. Cl. 501—6 11 Claims



1. A glass-ceramic body in which the primary crystal phase is composed of nepheline crystals less than 20 microns in diameter, the body has a microwave compatibility value of less than 150° C., and the composition of the body, in percent by weight

as calculated on an oxide basis, consists essentially of 30–55% SiO_2, 28–38% Al_2O_3, 5–12% TiO_2 as a nucleating agent, and 10–20% R_2O ($Na_2O+K_2O+Li_2O$), each mole of R_2O being composed of 0.65–0.95 moles Na_2O, 0.05–0.15 moles Li_2O and 0–0.20 moles K_2O.

4,341,873

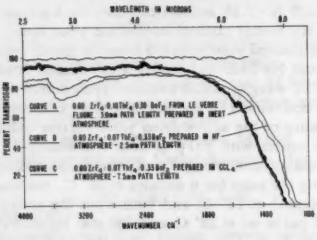
FLUOROZIRCONATE, GLASS AND THE PROCESS FOR MAKING THE SAME

Morton Robinson, Agoura; Ricardo C. Pastor, Manhattan Beach, and Morris Braunstein, Marina del Rey, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of Ser. No. 131,605, Mar. 19, 1980, abandoned. This application Aug. 26, 1981, Ser. No. 296,098

Int. Cl.[3] C03C *3/12, 13/00*

U.S. Cl. 501—40 9 Claims



1. An improved process for making infrared-transparent glasses from the fluorides of zirconium, thorium and barium wherein said improvement is comprised of the steps of:

(a) forming a melt from preselected molar proportions of ultra pure ZrF_4, BaF_2 and ThF_4, in the presence of a reactive atmosphere comprised of HF and He, and soaking said melt in said atmosphere thereby reducing the OH^- and/or $O^=$ concentration of said melt to an insignificant level;

(b) subsequently replacing said reactive atmosphere with a rectification mixture of He and CCl_4 as a nascent chlorine source thereby eliminating the color-center formation which occurs during the exposure of said melt to said HF/He mixture; and

(c) subsequently casting, annealing and cooling said melt to a glass in the presence of said rectification mixture.

4,341,874

Si_3N_4 CERAMIC POWDER MATERIAL AND METHOD FOR MANUFACTURING THE SAME

Katsutoshi Nishida; Michiyasu Komatsu, both of Yokohama, and Tadashi Miyano, Sagamihara, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Division of Ser. No. 78,584, Sep. 27, 1979, Pat. No. 4,284,432, which is a continuation of Ser. No. 867,299, Jan. 5, 1978, abandoned. This application Dec. 31, 1980, Ser. No. 221,813

Int. Cl.[3] C04B *35/58*

U.S. Cl. 501—97 2 Claims

1. A ceramic powder material consisting essentially of silicon nitride powder consisting essentially of from 0.05 to 2.5% by weight of aluminium and from 0.4 to 8.0% by weight of yttrium, in which all or a part of the yttrium contained in the silicon nitride powder is present in the form of a crystalline compound of silicon nitride and yttrium oxide and in which the total oxygen content W_O(% by weight) as measured by activation analysis falls within the range expressed by the following formula denoting the relationship between the content of aluminium W_{Al}(% by weight) and the content of yttrium W_Y(% by weight):

$$W_O \leqq 2.0 + 1.5 \times \left(W_{Al} \times \frac{\text{atomic weight of oxygen}}{\text{atomic weight of aluminium}} + W_Y \times \frac{\text{atomic weight of oxygen}}{\text{atomic weight of yttrium}} \right)$$

4,341,875

HIGH FLEXURAL MODULUS REACTION INJECTION MOLDED URETHANES

Robert L. Visger, Madison, and Mark A. Plano, East Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 5, 1979, Ser. No. 100,594

Int. Cl.[3] C08G *18/14, 18/32, 18/48*

U.S. Cl. 521—164 18 Claims

1. A foamable liquid composition capable of yielding when cured a microcellular urethane product with improved flexural modulus properties, said composition comprising:

(A) an organic isocyanate; and

(B) a mixture which comprises

(i) a base polyol having

(a) an equivalent weight in the range from about 1,800 to about 7,000, and

(b) an average functionality in the range from about 2 to about 4,

(ii) a chain extending agent comprising

(a) a glycol, and

(b) at least one high functionality supplemental polyol having an average molecular weight in the range from about 300 to about 1,550 and an average functionality of at least about 3,

(iii) a catalyst and

(iv) a foaming agent; and

wherein the stoichiometric equivalent weight of said organic isocyanate to said base polyol is in the range from about 95 to about 125, the amount of said chain extending agent employed is in the range from about 12 to about 40 parts per 100 parts of said mixture, and the amount of said high functionality supplemental polyol employed in said chain extending agent is at least about 2 parts per 100 parts of said mixture.

4,341,876

PROCESS FOR THE PRODUCTION OF A FOAMABLE MIXTURE FROM AT LEAST TWO FLUID, FOAM FORMING REACTANTS AND AGGREGATES

Karl D. Kreuer, and Klaus Schulte, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 42,683, May 25, 1979, Pat. No. 4,242,306. This application Jul. 24, 1980, Ser. No. 171,875

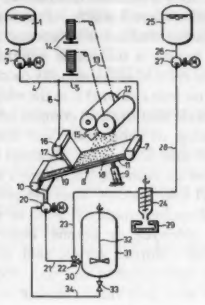
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1978, 2828506

Int. Cl.[3] B29J *1/02;* C08G *18/14;* C08J *9/00*

U.S. Cl. 521—170 4 Claims

1. In a process for the production of a foamable mixture of at least two fluid, foam forming reactants and at least one aggregate, in which the aggregate is mixed with one of the reactants, the resulting preliminary mixture is then mixed with the other reactant, the improvement wherein the first reactant which is

to be mixed with the aggregate is spread out to form a film and the aggregate is applied to this flowing film and the resulting



flowing composite is broken up to produce said preliminary mixture.

4,341,877

SIZING COMPOSITION AND SIZED GLASS FIBERS AND PROCESS

Balbhadra Das, Allison Park, and Billie D. Tucker, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 4, 1980, Ser. No. 156,459

Int. Cl.³ C08L *63/00*

U.S. Cl. 523—409 **19 Claims**

1. An aqueous sizing composition for glass fibers that is substantially soluble in polymeric materials the glass fibers are to reinforce, comprising:

(a) a predominant amount of the solids of the composition being an epoxidized polar thermoplastic copolymer having 3 to about 12 parts of epoxy per 100 parts of copolymer, where the comonomer is selected from vinyl acetate, acrylate and polyurethane condensate monomer, and where the polymer has a Tg in the range of ambient temperatures to about 70° C.;

(b) one or more organo silane coupling agents;

(c) one or more lubricants,

(d) an amount of water sufficient to make the percent solids of the sizing composition in the range of about 2 to about 30 weight percent.

4,341,878

COMPOSITIONS FOR TREATING ALUMINUM SURFACES FOR TARNISH RESISTANCE

Arnold F. Marcantonio; Paul J. Kress, and John W. Powers, all of Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 5,280, Jan. 22, 1979, abandoned. This application Jun. 23, 1980, Ser. No. 161,794

Int. Cl.³ C08K *3/34*

U.S. Cl. 524—3 **9 Claims**

1. A composition for resisting tarnish on aluminum surfaces during exposure to hot water baths, said composition comprising about 0.01 to about 10 weight percent of a water-soluble portion containing about 10 to about 95 weight percent of an alkali metal silicate and about 5 to about 90 weight percent of an organic polymer selected from the group consisting of poly(acrylic-co-acrylate), poly(vinyl alcohol), poly(acrylic acid), poly(acrylamide), poly(maleic anhydride-co-methylvinyl ether), and poly(styrene sulfonic acid), and about 90 to about 99.99 weight percent water.

4,341,879

POLYPHENYLENE ETHER RESIN COMPOSITION HAVING IMPROVED HEAT STABILITY AND IMPACT STRENGTH

Akitoshi Sugio, Ohmiya; Masanobu Masu, Tokyo; Masao Okabe, Abiko; Masatugu Matunaga, Tone, and Kozo Ishiyama, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Filed Mar. 11, 1981, Ser. No. 242,681

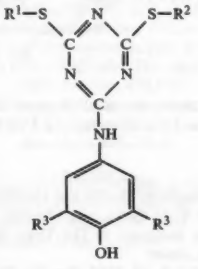
Claims priority, application Japan, Mar. 17, 1980, 55/33655; Mar. 17, 1980, 55/33656

Int. Cl.³ C08K *5/34*

U.S. Cl. 524—91 **26 Claims**

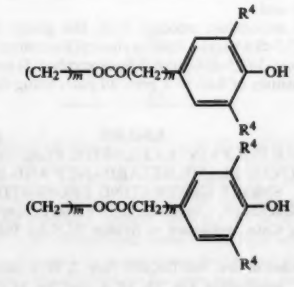
1. A polyphenylene ether resin composition having improved heat stability, said composition comprising a polymer matrix composed of a polyphenylene ether resin and a vinyl aromatic resin, and dispersed in the polymer matrix, at least one compound selected from the group consisting of

(1) compounds of the formula



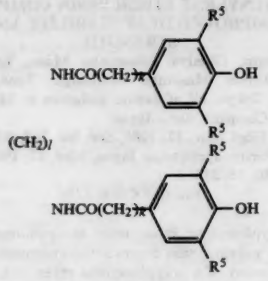
wherein R^1 and R^2 are identical or different and each represents an alkyl group having 5 to 15 carbon atoms, and R^3 represents an alkyl group having 1 to 10 carbon atoms,

(2) compounds of the formula



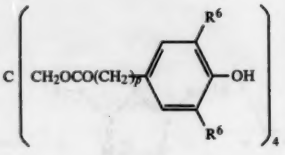
wherein R^4 represents an alkyl group having 1 to 10 carbon atoms, n is an integer of 1 to 4, and m is an integer of 2 to 6,

(3) compounds of the formula



wherein R^5 represents an alkyl group having 1 to 10 carbon atoms, k is an integer of 1 to 4, and l is an integer of 2 to 10, and

(4) compounds of the formula



wherein R^6 represents an alkyl group having 1 to 10 carbon atoms, and p is an integer of 1 to 4.

4,341,880

RESIN COMPOSITIONS OF IMPROVED HUE

Takashi Toyoda; Yozo Ohba, and Masaaki Yamanaka, all of Hasaki, Japan, assignors to Oji Yuka Goseishi Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1981, Ser. No. 236,303

Claims priority, application Japan, Feb. 26, 1980, 55-23265

Int. Cl.³ C08L *23/00, 23/06, 23/12*

U.S. Cl. 524—101 **13 Claims**

1. A resin composition of improved hue which comprises 100 parts of an olefin-based resin, 3 to 300 parts of finely divided calcium carbonate, 0.05 to 5 parts of a fatty acid having 12 or more carbon atoms and at least three members selected from the following antioxidants (a) through (c) in the stated proportions:

(a) 2,6-di-t-butyl paracresol, in a quantity of 0.05 to 1 part;

(b) an antioxidant selected from the group consistng of tri(mono- and/or di-nonylphenyl)phosphite and di-stearyl pentaerythritol di-phosphite, in a quantity of 0.05 to 1 part; and

(c) an antioxidant selected from the group consisting of tris(3,5-di-t-butyl-4-hydroxybenzyl)isocyanurate and octadecyl-3-(3,5-di-t-butyl-4-hydroxyphenyl)-propionate, in a quantity of 0.05 to 1 part, all parts being by weight.

4,341,881

FLEXIBLE POLYVINYL CHLORIDE PLASTICS HAVING IMPROVED FLAME RETARDANCY AND REDUCED SMOKE GENERATING PROPERTIES

John J. Kracklauer, Longmont, and Charles J. Sparkes, Boulder, both of Colo., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation of Ser. No. 738,495, Nov. 3, 1976, abandoned. This application Apr. 19, 1979, Ser. No. 31,673

Int. Cl.³ C08K *5/56*

U.S. Cl. 524—176 **9 Claims**

1. A flexible polyvinyl chloride plastic having improved flame retardancy and smoke suppression properties, containing in chemically uncombined form, per 100 parts, by wt., of polyvinyl chloride resin, a flame-retarding, smoke-suppressing mixture consisting essentially of from about 1 to about 20 parts, by weight, of antimony oxide and from about 0.01 to about 0.2 parts, by wt., based on iron content, of an organic compound containing a ferrocenyl radical of ferrocene nucleus, said organic compound having a molecular weight of a least 360, wherein the weight ratio of said antimony oxide to said organic compound (based on iron content) is in the range of about from 10 to 150 and wherein said organic compound is selected from the group consisting of monoalkyl and dialkyl substituted dicyclopentadienyl iron derivatives, alkanoyl substituted dicyclopentadienyl iron derivatives, and dimers and polymers of dicyclopentadienyl iron selected from the group of condensation products of dicyclopentadienyl iron, or alkyl derivatives thereof, with an aldehyde or ketone, copolymers of vinyl ferrocene with vinyl chloride, acrylic acid, methyl methacrylate, butadiene or cyclopentane and dicyclopentadienyl iron addition products with polyvinyl chloride or polyvinylidene chloride; and mixtures thereof.

4,341,882

LOW RESISTIVITY THERMOPLASTIC COMPOSITIONS

Arthur Katchman, Delmar, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 27, 1981, Ser. No. 296,589

Int. Cl.³ C08L *61/04*

U.S. Cl. 525—68 **9 Claims**

1. In a thermoplastic composition comprising polyphenylene ether and alkenyl aromatic resin, the improvement wherein said composition contains an effective amount of an anti-static agent selected from the group consisting of styrene-allyl alcohol copolymer, anionically polymerized poly(ethylene oxide) and a combination thereof.

4,341,883

IMPACT RESISTANT BLENDS OF ACRYLATE THERMOPLASTIC WITH SEQUENTIALLY POLYMERIZED FOUR COMPOSITION PARTICULATE ADDITIVE

Warren H. Gift, Morrisville, Pa., assignor to Plaskolite, Inc., Columbus, Ohio

Filed Oct. 29, 1980, Ser. No. 201,820

Int. Cl.³ C08L *33/12, 51/00;* **C08F** *265/06*

U.S. Cl. 525—82 **9 Claims**

1. A blend of from about 40 to 70 weight percent of an extrudable acrylate co-polymer resin with from about 60 to 30 weight percent of particles produced by the successive polymerizations, according to the following order, in the same emulsion of:

a first monomer mixture, which produces a core for the particles that is approximately 10 weight percent of the particles, and includes a portion of up to 5 weight percent butylene diacrylate and the balance of the monomer mixture includes over 50 weight percent butyl acrylate;

a second monomer mixture, which produces an elastomer within the particles that is approximately 55 weight percent of the particles, and includes a portion of up to 5 weight percent butylene diacrylate; a further portion of up to 5 weight percent allyl methacrylate; and the balance of the monomer mixture includes over 50 weight percent butyl acrylate;

a third monomer mixture, which produces an encapsulation shell for the particles that is approximately 20 weight percent of the particles, and includes a portion of up to 5 weight percent of allyl methacrylate and the balance of the monomer mixture includes over 85 weight percent methyl methacrylate;

a fourth monomer mixture, which produces a transition coating for the particles that is approximately 15 weight percent of the particles, and includes over

4,341,884

POLYMER COMPOSITION

Herman A. J. Schepers, Stein, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Apr. 1, 1981, Ser. No. 249,878

Claims priority, application Netherlands, Apr. 4, 1980, 8002023; Jul. 30, 1980, 8004377

Int. Cl.³ C08L *45/00*

U.S. Cl. 525—211 4 Claims

1. An impact resistant polymer composition combination formulated from the combination of:

a. 50 to 90 parts by weight of at least one copolymer obtained by the copolymerization of 10 to 90% by weight of a styrene monomer with 90 to 10% by weight of acrylonitrile or methacrylonitrile monomer;

b. 5 to 50 parts by weight of

b.1. a rubber having a substantially-saturated main chain, and

b.2. a chlorinated polyethylene having a chlorine content of between 32 and 40% by weight and a DSC crystallinity of 0 to 7%,

while maintaining the weight ratio of said chlorinated polyethylene to said rubber is between 1:1 and 4:1.

4,341,885

POLYMER COMPOSITION

Herman A. J. Schepers, Stein, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Apr. 1, 1981, Ser. No. 249,879

Claims priority, application Netherlands, Apr. 4, 1980, 8002022; Jul. 30, 1980, 8004377

Int. Cl.³ C08L *45/00*

U.S. Cl. 525—211 11 Claims

1. An impact resistant polymer composition combination formulated from the combination of

a. 50–95 parts by weight of at least one copolymer obtained by the copolymerization of 10 to 90% by weight of a styrene monomer with 90 to 10% by weight of an acrylonitrile monomer, and

b. 5 to 50 parts by weight of

b.1. a rubber substantially free from chain unsaturation,

b.2. a chlorinated polyethylene having a chlorine content of at least 10% by weight, a DSC crystallinity of at least 10% and a glass transition temperature of at least −15° C.

4,341,886

PROCESS FOR PREPARING BIMODAL OR MULTIMODAL POLYMERS OF CONJUGATED DIENES

Christian Freppel, Chamalieres, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Apr. 6, 1981, Ser. No. 251,856

Claims priority, application France, Apr. 9, 1980, 80 08111

Int. Cl.³ C08F *2/38*

U.S. Cl. 526—79 10 Claims

1. A process of preparing a bimodal or multimodal homopolymer of a conjugated diene or a bimodal or multimodal copolymer of a conjugated diene with another conjugated diene or with a vinyl aromatic compound, consisting in polymerizing the monomer(s) in a reaction medium at a temperature of between 20° C. and 200° C. in the presence of a catalyst system comprising an organolithium initiator, a barium, strontium or calcium compound, and an organometallic compound of a metal of group 2B or 3A of the periodic classification of elements of the Mendeleev Table,

characterized by

adding to the reaction medium during the course of the polymerization reaction, as a modifying agent which is not a polymerization initiator, a compound of a transition metal of groups 1B to 7B and 8 of the periodic classification of the elements of the Mendeleev Table or a magnesium compound of the general formula MG $(A)_2$ in which A represents an alkyl radical having from 1 to 10 carbon atoms or an alcoholate, phenate, beta-diketonate or carboxylate radical.

4,341,887

AZETIDINIUM SALTS AND POLYMERS AND COPOLYMERS THEREOF

Rudolf S. Buriks, and Eva G. Lovett, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Mar. 7, 1980, Ser. No. 128,337

Int. Cl.³ C08F *14/14, 26/02*

U.S. Cl. 526—263 4 Claims

1. Homo- and copolymers of N,N-diallyl-3-hydroxy azetidinium halide, formed under free radical conditions where, in the copolymers, one of the monomers of the copolymer is a vinyl monomer.

4,341,888

DIORGANOPOLYSILOXANE COPOLYMERS AND PROCESS FOR THE PREPARATION THEREOF

John S. Razzano, Watervliet, N.Y., assignor to General Electric Company, New York, N.Y.

Continuation of Ser. No. 790,010, Apr. 22, 1977, abandoned, which is a continuation of Ser. No. 574,332, May 5, 1975, abandoned, which is a continuation-in-part of Ser. No. 463,435, Apr. 24, 1974, Pat. No. 3,937,684. This application Aug. 14, 1980, Ser. No. 178,175

The portion of the term of this patent subsequent to Feb. 10, 1993, has been disclaimed.

Int. Cl.³ C08G *77/06*

U.S. Cl. 528—14 9 Claims

1. A process for producing diorganopolysiloxane copolymers having a viscosity of from 50 to 200,000,000 centipoise at 25° C. comprising (a) reacting a mixture of

(i) a cyclic polysiloxane of the formula,

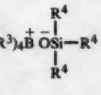
$$(RR^1SiO)_4$$

or a mixed such polysiloxane and

(ii) a cyclic polysiloxane of the formula,

$$(R_2^2SiO)_y$$

wherein y is from 3 to 6, or mixed such polysiloxanes, (i) being present in an amount of from 30 to 98 mol % of the mixture of (i) and (ii) at a temperature in the range of 0° to 90° C. in the presence of 5 to 300 parts per million of a catalyst selected from the group consisting of CsOH, a silanolate thereof, or a compound of the formula,



wherein R^3 is alkyl of 1 to 8 carbon atoms, cycloalkyl of 4 to 8 carbon atoms or phenyl, B is nitrogen or phosphorous, R^4 is alkyl of 1 to 8 carbon atoms, cycloalkyl of 4 to 8 carbon atoms, phenyl, a siloxane chain of the unit formula, $R_a^5SiO_{(4-a)/2}$ and mixtures thereof wherein R^5 is monovalent hydrocarbon or halogenated monovalent hydrocarbon, a is from 1.5 to 2.5, and (b) neutralizing the catalyst in the reaction mixture after equilibrium has been reached, and wherein R^1 is $R^7CH_2CH_2$— and R^7 is perfluoroalkyl of 1 to 6 carbon atoms, R is the same as R^1 and in addition, methyl, ethyl, vinyl or phenyl, and R^2 is, independently, methyl, ethyl, vinyl or phenyl.

4,341,889
POLYSILOXANE COMPOSITION AND BIOMEDICAL DEVICES

William G. Deichert, Macedon; Gary D. Friends, Ontario; John B. Melpolder, Hilton, and Joon S. Park, Rochester, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Feb. 26, 1981, Ser. No. 238,525
Int. Cl.³ C08G 77/14; C08F 220/06
U.S. Cl. 528—26 17 Claims

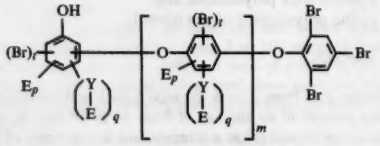
1. A shaped article suitable for use in biomedical applications being a polymer formed by polymerizing (a) one or more polysiloxane monomers α,ω terminally bonded through divalent hydrocarbon groups to an activated unsaturated group with (b) tertiary butyl styrene and (c) a tear film stabilizer to form a crosslinked three-dimensional polymeric network, said polymer having a tangent modulus of elasticity value of at least 25,000 g/mm^2 and an oxygen permeability of at least 10×10^{-11}cm^3 cm/(sec.cm^2 mmHg), said teritiary butyl styrene being present in an amount from 80 to 40 parts per 20 to 60 parts of polysiloxane monomers and the sum of parts equals 100, and wherein 2 to 20 parts of tear film stabilizer are present per 100 parts of tertiary butyl styrene and polysiloxane monomer, said stabilizer being selected from the group consisting of hydroxyethylmethacrylate, hydroxyethylacrylate, hydroxypropylmethacrylate, hydroxypropylacrylate, acrylic acid, methacrylic acid and mixtures thereof.

4,341,890
POLY(BROMINATED PHENYLENE OXIDE) AND FLAME-RETARDED HIGH IMPACT POLYSTYRENE COMPOSITION

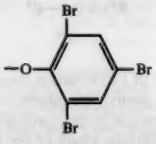
Michael W. Lindvay, Ft. Wayne, Ind., assignor to Great Lakes Chemical Corporation, West Lafayette, Ind.

Division of Ser. No. 83,745, Oct. 11, 1979, which is a continuation-in-part of Ser. No. 911,642, Jun. 1, 1978, abandoned. This application Nov. 10, 1980, Ser. No. 205,829
Int. Cl.³ C08G 65/38, 65/44
U.S. Cl. 528—212 2 Claims

1. A branched polymer having a hydroxyl number of from 2.8 to about 30 of the structural formula



wherein each repeating unit set out within the brackets of the structural formula is attached in an ortho or para configuration to its adjacent phenyl and phenoxy moiety; and wherein E is an end group of the formula



Y is a side chain of the same structure and configuration as said repeating unit; the substituents Br, E and Y on each phenyl ring are attached only to the ortho or para positions relative the hydroxyl group in the structural formula and the oxygen atom in the repeating unit; each t, p and q are independently the integer 0 or 1, provided that the sum of t plus p plus q equals 2, and provided that from about 10 to about 80 percent of the repeating units have the side chain and end unit —Y—E attached thereto; and m is an integer such that the total molecular weight of the polymer ranges from 2000 to 20,000.

4,341,891
METHOD FOR REDUCING GELS IN POLYOLEFIN

Donald E. Gessell, and David M. Courter, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 29, 1980, Ser. No. 221,090
Int. Cl.³ C08F 6/00, 8/04
U.S. Cl. 528—483 5 Claims

1. A method for decreasing gel formation in articles fabricated from polymers prepared by polymerizing at least one α-olefin, said method consisting essentially of the steps of:

(a) polymerizing said at least one α-olefin in a reaction system under slurry conditions and in the presence of a Ziegler-Natta catalyst thereby forming a polymer of said at least one α-olefin, said polymer being characterized as having a molecular weight that is controlled by conducting said polymerization in the presence of a predetermined quantity of hydrogen; and

(b) contacting said polymer formed in step (a), after it has been removed from said reaction system, with an additional quantity of hydrogen without introducing additional quantities of α-olefin, thereby terminating continuing post-reaction system polymerization of higher molecular weight polymer thereby decreasing the formation of gels in articles fabricated from the polymer.

4,341,892
PREPARATION OF ALKALI CELLULOSE HAVING A LOW WATER CONTENT

Norbert Kühne, Haan; Hasso Leischner; Wilfried Rähse, both of Düsseldorf, and Willi Wüst, Ratingen-Hösel, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Mar. 13, 1981, Ser. No. 243,502
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010464
Int. Cl.³ C08B 1/08
U.S. Cl. 536—101 14 Claims

1. A process for the preparation of alkali cellulose having a low water content, wherein finely divided cellulose suspended in an inert organic solvent is presteeped with an alkali metal hydroxide and optionally an alcohol and the presteeped suspension is contacted with an aqueous alkali metal hydroxide alkalization solution of different concentration.

4,341,893
QUINAZOLINE DERIVATIVES

Philippe M. J. Manoury, L'Hay les Roses, France, assignor to Synthelabo, Paris, France

Filed May 9, 1977, Ser. No. 795,375
Claims priority, application France, May 7, 1976, 76 13681; Aug. 24, 1976, 76 25563
Int. Cl.³ C07D 239/95, 401/04, 413/12, 413/14
U.S. Cl. 544—284 7 Claims

1. 4-Amino-6,7-dimethoxy-2-[4-(3,4-methylenedioxy-benzoyl)-piperidino]-quinazoline and its pharmaceutically acceptable acid addition salts.

2. 4-Amino-6,7-dimethoxy-2-[4-(3-methoxybenzoyl)-piperidino]-quinazoline and its pharmaceutically acceptable acid addition salts.

3. N_1-(4-amino-6,7-dimethoxyquinazolinyl-2)-N_1N_2-dimethyl-N_2-(furoyl-2)-propylenediamine and its pharmaceutically acceptable acid addition salts.

4. N_1-(4-amino-6,7-dimethoxyquinazolinyl-2)-N_2-benzoyl-N_1N_2-dimethylpropylenediamine and its pharmaceutically acceptable acid addition salts.

6. 4-Amino-6,7-dimethoxy-2-[4-(5-methylthio-1,3,4-oxadiazole-2-carbonyl)-piperidino]-quinazoline and its pharmaceutically acceptable acid addition salts.

4,341,894

SENSITIZERS FOR PHOTOCONDUCTIVE COMPOSITIONS

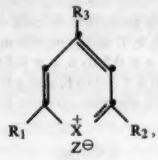
Michael T. Regan, Fairport; George A. Reynolds, Rochester; Donald P. Specht, Spencerport, and James A. VanAllan, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 885,927, Mar. 13, 1978, Pat. No. 4,167,412, which is a continuation-in-part of Ser. No. 711,046, Aug. 2, 1976, abandoned. This application Apr. 26, 1979, Ser. No. 33,614

Int. Cl.[3] C07D *309/32, 335/00*

U.S. Cl. 544—333 5 Claims

1. A 2,4,6-trisubstituted pyrylium dye salt having the structure:



wherein:

each of R_1 and R_2, which may be the same or different, represent a phenyl radical, thienyl, furyl, pyridyl, pyrrolyl, pyrimidinyl, thiadiazolyl or thiazolyl, with the proviso that no more than one of R_1 and R_2 is a phenyl radical;

R_3 represents an alkylamino-substituted phenyl radical, dialkylaminopyridyl, dialkylaminofuryl, dialkylaminothienyl, dialkylaminopyrimidinyl, dialkylaminothidiazolyl or dialkylaminothiazolyl;

X represents oxygen or sulfur;

Z represents an anion and

wherein at least one of R_1, R_2 and R_3 is one of the above enumerated heterocyclic moieties.

4,341,895

TROPANE DERIVATIVES

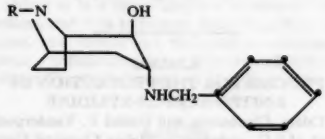
Robert L. Clarke, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Mar. 3, 1981, Ser. No. 240,179

Int. Cl.[3] C07D *451/02*

U.S. Cl. 546—129 5 Claims

1. A compound of the formula



where R is alkoxycarbonyl or alkanoyl having from two to four carbon atoms; or a pharmaceutically acceptable acid-addition salt thereof.

4,341,896

1-HYDROXY-4-HETEROARYLAMINOANTHRAQUINONES

Max Jost, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

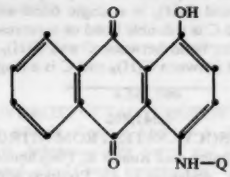
Filed May 19, 1980, Ser. No. 151,224

Claims priority, application Switzerland, May 30, 1979, 5035/79

Int. Cl.[3] C07D *271/10, 263/56, 277/66*; C08L *67/00*

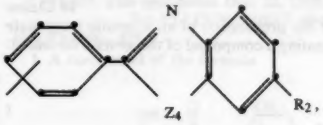
U.S. Cl. 548—143 7 Claims

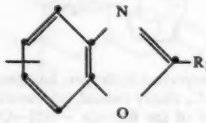
1. A 1-hydroxy-4-heteroarylaminoanthraquinone of the formula

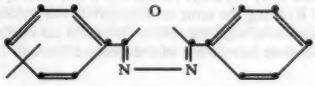


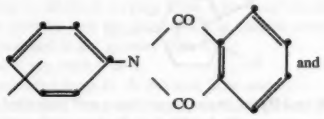
(I)

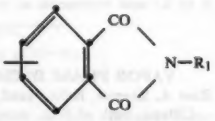
wherein Q is a group selected from the group consisting of











wherein Z_4 is —O— or —S—, R_1 is hydrogen, C_{1-4}-alkyl or phenyl, and R_2 is hydrogen or C_{1-4}-alkyl.

4,341,897

PYRANIC DERIVATIVES FOR USE IN THE PREPARATION OF MUSCONE

Karl-Heinrich Schulte-Elte, Onex; Arnold Hauser, Petit-Lancy, and Günther Ohloff, Bernex, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

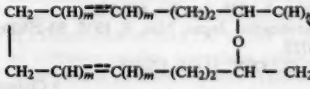
Division of Ser. No. 96,054, Nov. 20, 1979, Pat. No. 4,277,625. This application Mar. 30, 1981, Ser. No. 249,117

Claims priority, application Switzerland, Dec. 7, 1978, 12510/78

Int. Cl.[3] C07D *311/00*

U.S. Cl. 549—355 1 Claim

1. A pyranic compound having the formula:



(IV)

wherein m represents 1 or 2, as a result which necessitated

external cooling and n represents 1 and p represents 3 and the bond between C and $C(H)_p$ is a single bond and the bond between $C(H)_n$ and C is a double bond or n represents 2 and p represents 2 and the bond between C and $C(H)_p$ is a double bond and the bond between $C(H)_n$ and C is a single bond.

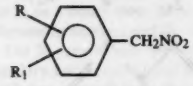
4,341,898

SYNTHESIS OF ISOCYANATES FROM NITROALKANES

Barton Milligan, Coplay, and Robert K. Pinschmidt, Jr., Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

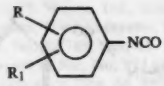
Filed May 18, 1981, Ser. No. 264,253
Int. Cl.³ C07C *118/00, 125/063, 125/07*
U.S. Cl. 560—24 **16 Claims**

1. A process for the preparation of an aromatic isocyanate which comprises heating a compound of the general formula I:



I

wherein R and R_1 represent hydrogen, halogen, nitro, a C_1–C_5 alkyl radical, a C_1–C_4 alkoxy radical, isocyanato, an alkoxycarbonylamino radical of the formula —NH—$COOR_2$ wherein R_2 represents a C_1–C_5 alkyl radical, or a nitromethyl radical, with R and R_1 being the same or different, in the presence of an effective amount of a Lewis acid or Bronsted acid substance to yield an aromatic isocyanate of the general formula II:



II

wherein R and R_1 are the same as above and provided that if R or R_1 were a nitromethyl radical in the general formula I, such R or R_1 now represents an isocyanato group.

4,341,899

VAPOR PHASE DECHLORINATION PROCESS

Ross A. Kremer, Belle Mead, and Leopoldo C. Mansueto, Jr., Gillette, both of N.J., assignors to Rhone-Poulenc Agrochimie, Lyons, France

Filed Feb. 4, 1980, Ser. No. 118,174
Int. Cl.³ C07C *69/78*
U.S. Cl. 560—103 **3 Claims**

1. A selective dechlorination process that consists essentially of contacting a vaporized mixture of methyl 2,5-dichlorobenzoate and hydrogen, in a molar ratio respectively of 1:3–4, together with between about 1% and about 10% of methanol by weight of methyl 2,5-dichlorobenzoate with a nickel catalyst at a temperature between about 200° C. and about 300° C. and for a residence time of between about 2.0 seconds and about 5.0 seconds.

4,341,900

CATALYTIC PROCESS FOR THE PREPARATION OF UNSATURATED CARBOXYLIC ACID

Hiromichi Ishii; Hideo Matsuzawa; Masao Kobayashi, and Masato Otani, all of Otake, Japan, assignors to Mitsubishi Rayon Company, Limited, Tokyo, Japan

Filed Mar. 3, 1976, Ser. No. 663,361
Claims priority, application Japan, Mar. 5, 1975, 50-25800; Mar. 5, 1975, 50-26732
Int. Cl.³ C07C *51/25, 57/055*
U.S. Cl. 562—532 **9 Claims**

1. A process for the preparation of unsaturated carboxylic acid, which comprises catalytically oxidizing acrolein, methacrolein or mixtures thereof in the gas phase at a temperature of 240° to 450° C. with molecular oxygen to form the corresponding unsaturated carboxylic acid in the presence of a catalyst represented by the following formula:

$$Mo_{12}P_aQ_bR_cX_dY_eZ_fO_g$$

wherein Mo is molybdenum, P is phosphorus, O is oxygen, Q is calcium, magnesium or a mixture thereof, R is at least one element selected from the group consisting of potassium, rubidium, cesium and thallium, X is at least one element selected from the group consisting of boron, silicon, manganese, iron, cobalt, zinc, germanium, uranium, tin, lead, chromium, titanium, tantalum, antimony, niobium and bismuth, Y is at least one element selected from the group consisting of vanadium, copper and nickel, Z is strontium, barium or a mixture thereof, and wherein a, b, c, d, e, f, and g represent the atomic ratio of each component and a is 0.5 to 6, b is 0.2 to 6, c is 0.2 to 6, d is 0.01 to 6, e is 0.01 to 6, f is 0 to 6, and g is a value determined by the valencies of the elements present in the catalyst.

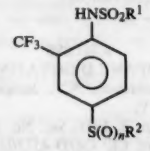
4,341,901

4-ALKYLTHIO-2-TRIFLUOROMETHYLALKANESULFONANILIDES AND DERIVATIVES THEREOF

Sharon L. Ruffing, Oakdale; Wallace E. Burg, Lakeland, and Ezzat A. Mikhail, New Brighton, all of Minn., assignors to Minnesota Mining and Manufacturing Co., Saint Paul, Minn.

Continuation-in-part of Ser. No. 879,079, Feb. 21, 1978, abandoned, which is a continuation-in-part of Ser. No. 786,222, Apr. 11, 1977, abandoned. This application Oct. 14, 1980, Ser. No. 196,757
Int. Cl.³ C07C *143/75*; A01N *9/16*
U.S. Cl. 564—99 **26 Claims**

1. A compound of the formula



wherein R^1 and R^2 are independently alkyl groups containing from 1 to 4 carbon atoms and n is 0–2, provided that R^1 and R^2 are not both methyl, and agriculturally acceptable salts thereof.

4,341,902

PROCESS FOR THE PRODUCTION OF 5-NITRO-ACET-2,4-XYLIDINE

Karl W. Thiem, Charleston, and Daniel P. Vanderpool, Hanahan, both of S.C., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jun. 26, 1981, Ser. No. 278,545
Int. Cl.³ C07C *102/00*
U.S. Cl. 564—218 **7 Claims**

1. A process for preparing 5-nitro-acet-2,4-xylidine comprising

(a) dissolving acet-2,4-xylidine in an aqueous sulfuric acid solution,

(b) nitrating the resultant solution with a mixture of nitric acid and sulfuric acid,

(c) adding the resultant nitration mixture to an aqueous sulfuric acid solution containing from 25 to 45% by weight of sulfuric acid, while maintaining the temperature at from 20° to 50° C. to thereby produce a slurry containing sulfuric acid in a concentration of from 30 to 50% by weight based solely on the weight of water and sulfuric acid, the total amount of sulfuric acid in said slurry being

such that the molar ratio of sulfuric acid to the nitro-acet-2,4-xylidine isomers is from 53:1 to 10:1, and

(d) recovering 5-nitro-acet-2,4-xylidine.

4,341,903

PROCESS FOR REARRANGEMENT OF ALKYL GROUPS ON AROMATIC AMINES

John C. Wollensak, Bloomfield Hills; Kryn G. Ihrman, Farmington, and Chester P. Jarema, Sterling Heights, all of Mich., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 240,752, Mar. 5, 1981, Pat. No. 4,317,931, which is a continuation-in-part of Ser. No. 72,931, Sep. 6, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,099

The portion of the term of this patent subsequent to Mar. 2, 1999, has been disclaimed.

Int. Cl.³ C07C *85/24*

U.S. Cl. 564—409 **11 Claims**

1. A process for producing nuclearly methyl-substituted anilines from N-methyl substituted anilines comprising heating an N-methyl substituted aniline at a temperature of about 100°–500° C. in the presence of an aluminum anilide catalyst and a metal-containing cocatalyst, said metal being selected from nickel, cobalt, molybdenum, and titanium.

4,341,904

DERIVATIVES OF 2-HYDROXY-6,9-METHANO-11-AMINO-5,6,7,8,9,10-HEXAHYDRO-BENZOCYCLOOCTENE

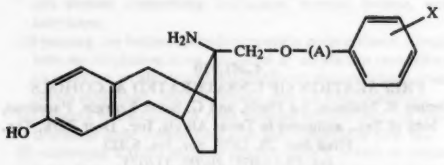
Patrice C. Belanger, Dollard des Ormeaux, and Robert N. Young, Senneville, both of Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 19, 1980, Ser. No. 117,701

Int. Cl.³ C07C *87/40*

U.S. Cl. 564—427 **2 Claims**

1. A compound of the formula:



wherein

A is absent or is a lower alkylene substituent of from 1–3 carbons, and X is hydrogen; halo; C_{1-4}alkyl; C_{1-4}alkoxy; amino, and mono- and di-C_{1-4}alkyl substituted amino; cyano; trifluoromethyl; trifluoromethylthio; C_{1-4}alkylthio; C_{1-4}alkylsulfoxide; or C_{1-4}alkylsulfone.

4,341,905

INORGANIC HALIDE SALT CATALYSTS FOR HYDROXYALKYLATION OF PHENOLS OR THIOPHENOLS

Paul E. Strege, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 58,705, Jul. 18, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 179,129

Int. Cl.³ C07C *41/16*

U.S. Cl. 568—45 **9 Claims**

1. In the method of hydroxyalkylation wherein phenol- or thiophenol-containing compounds are reacted with cyclic organic carbonate compounds in the presence of a catalyst followed by recovery of the hydroxyalkylaryl ether or thioether formed, the improvement wherein the reaction is conducted without addition of strong acid or base and the catalyst is an inorganic halide salt selected from a group consisting of potassium fluoride, rubidium fluoride, cesium fluoride, lithium chloride, sodium chloride, potassium chloride, rubidium chloride, cesium chloride, lithium bromide, sodium bromide and potassium bromide.

4,341,906

1,9-DIHYDROXYOCTAHYDROPHENANTHRENES

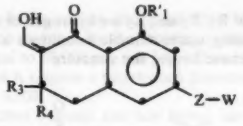
Thomas H. Althuis, Groton; Charles A. Harbert, Waterford; Michael R. Johnson, Gales Ferry, and Lawrence S. Melvin, Jr., Ledyard, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 78,474, Sep. 24, 1979, Pat. No. 4,270,005, which is a division of Ser. No. 851,503, Nov. 14, 1977, Pat. No. 4,188,495. This application Dec. 22, 1980, Ser. No. 219,320

Int. Cl.³ C07C *49/637, 49/447*

U.S. Cl. 568—328 **22 Claims**

1. A compound of the formula



wherein

R'_1 is selected from hydrogen, alkanoyl of 1 to 6 carbon atoms and benzoyl;

R_3 is selected from hydrogen, methyl and ethyl;

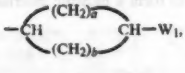
R_4 is selected from hydrogen, alkyl of 1 to 6 carbon atoms and benzyl;

Z is $—(alk_1)_m—X—(alk_2)_n—$ wherein each of (alk_1) and (alk_2) is alkylene having from 1 to 9 carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than 9;

m and n are each 0 or 1;

X is selected from O, S, SO and SO_2; and

W is selected from hydrogen, methyl, pyridyl, piperidyl, phenyl, monochlorophenyl, monofluorophenyl and



wherein W_1 is selected from hydrogen, phenyl, monochlorophenyl and monofluorophenyl; a is an integer from 1 to 5 and b is 0 or an integer from 1 to 4, with the proviso that the sum of a and b is not greater than 5.

4,341,907

CATALYTIC OXIDATION OF CYCLOPARAFFINS

Ronald A. Zelonka, Whitby, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Continuation-in-part of Ser. No. 74,096, Sep. 10, 1979, abandoned. This application Jan. 30, 1981, Ser. No. 229,873

Claims priority, application United Kingdom, Sep. 19, 1978, 37305/78

Int. Cl.³ C07C *45/00, 7/12*

U.S. Cl. 568—360 **4 Claims**

1. A process for the catalytic oxidation of a liquid cycloparaffin to partial oxidation products thereof which comprises introducing a molecular oxygen-containing gas into a cycloparaffin of from 5 to 12 carbon atoms at elevated pressure and at a temperature of from 130° to 180° C. and in the presence of an oxidation catalyst comprising cobalt bis[di(2-ethylhexyl)-phosphate] in combination with pyridine, said oxidation catalyst being capable of forming a concentrate in the cycloparaffin, having a cobalt concentration of at least 0.1%.

4,341,908

AMBRINOL AND ITS HOMOLOGUES

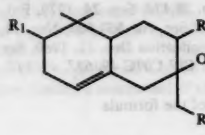
Brian J. Willis, Bergenfield; Philip A. Christenson, Midland Park, both of N.J., and Robert A. Mack, Valley Stream, N.Y., assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Filed Jun. 20, 1980, Ser. No. 161,329

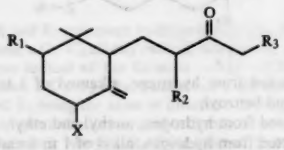
Int. Cl.³ C07C *35/23*

U.S. Cl. 568—819 **10 Claims**

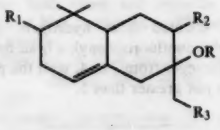
1. A method of preparing a bicyclic alcohol having the structure



wherein each of R_1, R_2 and R_3 are hydrogen or methyl which comprises reacting under suitable conditions a halogen-containing cyclohexane having the structure



wherein each of R_1, R_2 and R_3 are hydrogen or methyl and X is a halogen with a reagent capable of effecting intramolecular cyclization of said halogen-containing cyclohexane compound and selected from the group consisting of metals from Groups 1 and 2 of the Periodic Table; electron transfer reagents such as Na/napthalene; alloys including amalgams of Group 1, 2 and 3 elements; Transition metals such as Fe, Cu, Cd and Hg; salts of elements of Groups 1, 2 and 3 of the Periodic Table; and salts of Transition metals such as Zn^{2+}, Cu^{2+}, Hg^{2+}, Cr^{2+}, V^{2+} and Ti^{3+} and containing a moiety R, in the presence of a non-protic solvent to form a bicyclic intermediate having the structure



wherein R is a moiety derived from said reagent, and hydrolyzing under suitable conditions said intermediate to produce said bicyclic alcohol.

4,341,909

PREPARATION OF LOW MOLECULAR WEIGHT POLYHYDROXYL COMPOUNDS

Gottfried Schneider; Kuno Wagner, and Hanns P. Müller, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 829,172, Aug. 30, 1977, abandoned. This application Sep. 14, 1981, Ser. No. 301,609

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1976, 2639084

Int. Cl.³ C07C *47/19*; C08G *18/32, 18/14*

U.S. Cl. 568—863 **9 Claims**

1. In a process for the preparation of mixtures of low molecular weight polyhydroxyl compounds and hydroxyl aldehydes and hydroxy ketones by condensation of formaldehyde in the presence of compounds of divalent lead as catalysts and in the presence of co-catalysts containing a mixture of hydroxy aldehydes and hydroxy ketones, at a reaction temperature of from 70° to 110° C., the improvement which comprises

(1) condensing aqueous formalin solutions and/or paraformaldehyde dispersions containing from 20 to 65% by weight of formaldehyde in the presence of:

(a) soluble or insoluble lead (II) salts or divalent lead attached to a high molecular weight resinous carrier; and

(b) a co-catalyst comprising a mixture of hydroxy aldehydes and hydroxy ketones obtainable by condensation of formaldehyde, which mixture contains at least 75% by weight of C_3–C_6-compounds and is characterized by the following molar ratios:

compounds having 3 carbon atoms/compounds having 4 carbon atoms from 0.5:1 to 2.0:1;

compounds having 4 carbon atoms/compounds having 5 carbon atoms from 0.2:1 to 2.0:1;

compounds having 5 carbon atoms/compounds having 6 carbon atoms from 0.5:1 to 5.0:1;

(2) maintaining the pH of the reaction solution at from 6.0 to 7.0 by controlled addition of inorganic or organic base until from 10 to 60% by weight of the starting material has undergone reaction,

(3) thereafter, lowering the pH of the reaction solution by from 0.5 to 3.0 units to a pH of from 4 to 6,

(4) continuing the reaction at a pH of from 4.0 to 6.0, and

(5) stopping the self-condensation of formaldehyde hydrate by cooling and/or by inactivation of the lead catalyst by means of acids when the residual formaldehyde content in the reaction mixture is from 0 to 10% by weight of formaldehyde and thereafter removing the catalyst in the known manner.

4,341,910

PREPARATION OF UNSATURATED ALCOHOLS

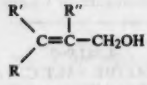
Dennis B. Malpass, La Porte, and G. Scott Yeargin, Pasadena, both of Tex., assignors to Texas Alkyls, Inc., Deer Park, Tex.

Filed Jan. 25, 1979, Ser. No. 6,323

Int. Cl.³ C07C *29/00, 33/025*

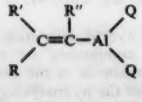
U.S. Cl. 568—878 **7 Claims**

1. A process for the production of compounds selected from the group consisting of cis and trans isomers of compounds having the formula



in which R, R' and R'' are independently hydrogen or alkyl groups having from 1 to 20 carbon atoms, comprising

(a) reacting the corresponding cis or trans isomer of a compound having the formula



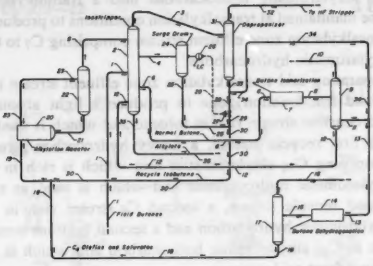
in which R, R' and R'' are as defined and Q is an alkyl group having from 1 to 20 carbon atoms, with paraformaldehyde and

(b) hydrolyzing the product of step (a) in the presence of an acid.

4,341,911
HYDROCARBON CONVERSION PROCESS FOR THE PRODUCTION OF GASOLINE

Bipin V. Vora, Elk Grove Village, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 29, 1980, Ser. No. 220,547
Int. Cl.³ C07C *2/58*
U.S. Cl. 585—332 14 Claims



1. A hydrocarbon conversion process which comprises the steps of:

(a) passing a feed stream which comprises normal butane into a fractionation zone comprising one fractionation column;

(b) removing a first process stream, which is rich in normal butane, from the fractionation zone and passing the first process stream into a butane isomerization zone operated at isomerization conditions to produce a butane isomerization zone effluent stream which comprises isobutane and normal butane;

(c) passing the butane isomerization zone effluent stream and a hereinafter characterized second process stream into a butane dehydrogenation zone operated at dehydrogenation conditions to produce a dehydrogenation zone effluent stream comprising isobutane, normal butane, and butylenes;

(d) passing the butane dehydrogenation zone effluent stream into an alkylation zone operated at alkylation conditions to produce an alkylation zone effluent stream which comprises isobutane, normal butane and C_8 hydrocarbons;

(e) passing the alkylation zone effluent stream into the fractionation zone comprising said one column of step (a);

(f) removing a third process stream, which is rich in isobutane, from the fractionation zone and passing at least a portion of the third process stream into the alkylation zone;

(g) removing a fourth process stream, which comprises propane and isobutane, from the fractionation zone and passing substantially all the hydrocarbons present in the fourth process stream into a depropanizer column;

(h) removing an isobutane-rich fifth process stream from the depropanizer column and passing the fifth process stream into the butane dehydrogenation zone as at least a portion of said second process stream; and,

(i) removing a net product stream comprising saturated C_8 hydrocarbons from the fractionation zone of step (a).

4,341,912
PROCESS FOR PRODUCING ALKENYL-SUBSTITUTED AROMATIC COMPOUNDS AND CATALYST THEREFOR

Kunimasa Takahashi; Makoto Imanari, and Yoshihisa Watanabe, all of Amimachi, Japan, assignors to Mitsubishi Petrochemical Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 837,270, Sep. 27, 1977, abandoned. This application Jul. 16, 1979, Ser. No. 57,810
Claims priority, application Japan, Oct. 1, 1976, 51-117253
Int. Cl.³ C07C *4/02*
U.S. Cl. 585—443 18 Claims

1. A process for producing an alkenyl-substituted aromatic compound by the oxidative dehydrogenation of the corresponding alkyl-substituted aromatic compound which comprises catalytically reacting at a temperature in the range of about 200° C. to about 400° C. an alkyl-substituted aromatic compound in the vapor phase in the presence of molecular oxygen and a catalyst composed of palladium metal having a crystal size of about 200 A, a metal halide compound and at least one promotor selected from the group consisting of elements of Groups Ia, IIa, IIb and VIa of the periodic table, and elements of Group VIII of the periodic table other than palladium to convert said alkyl substituted aromatic compound to the corresponding alkenyl-substituted aromatic compound wherein said palladium metal, metal halide compound and promotor element are supported on an alumina carrier containing at least 80% by weight of the total alumina of α-alumina wherein the alumina carrier has a pore volume ratio (Vmin), expressed by the following equation

$$Vmin = V_A/(V_A+V_B)$$

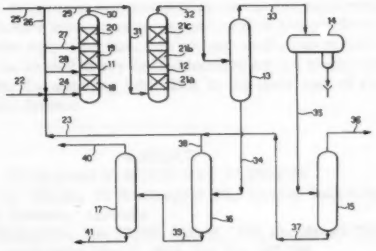
wherein V_A is the volume (ml/g) of pores which require a penetration pressure by the mercury penetration method of 6,000 psi to 60,000 psi, and V_B is the volume (ml/g) of pores which require a penetration pressure of 900 psi to less than 6,000,

of not more than 0.2 said reaction being carried out in the presence of a compound selected from the group consisting of bromine compounds and chlorine compounds which are gaseous under the reaction conditions and in an amount of 0.1 to less than 50 ppm as its concentration in the mixture of the alkyl-substituted aromatic compound gas and the molecular oxygen-containing gas.

4,341,913
PROCESS FOR THE PRODUCTION OF CUMENE

Benedetto Calcagno, Milan; Emanuele Sartorio, Messina; Claudio Divo, Saronno, and Luigi Verde, Busto Arsizio, all of Italy, assignors to Euteco Impianti S.p.A., Milan, Italy

Filed Dec. 19, 1980, Ser. No. 217,736
Claims priority, application Italy, Dec. 19, 1980, 28220 A/79
Int. Cl.³ C07C *2/68*
U.S. Cl. 585—449 9 Claims



1. A continuous process for the production of cumene by alkylation of benzene with propylene on a solid phosphoric acid catalyst, which comprises:

using two reaction steps in series, the first step being carried out in a plurality of catalyst beds in series and the second step in a catalyst bed having a volume substantially equal to the overall volume of the catalyst beds of the first step;

operating in said first and second steps in a substantially liquid phase, at a temperature of from 170° C. to 270° C. and under a pressure of from 30 to 50 Kg/sq. cm.;

using an overall benzene/propylene molar ratio of from 6:1 to 10:1, continuously delivering the whole of the benzene in the liquid form to the first catalyst bed of the first step, continuously delivering a series of streams of liquid propylene respectively to the first catalyst bed of the first step and, in the form of a cold stream, between each pair of

contiguous beds of the first and second steps, in such amounts that the benzene/propylene molar ratio be about 16:1 to 25:1 at the inlet of each individual catalyst bed of the first step, and higher than about 25:1 at the inlet of the catalyst bed of the second step; and

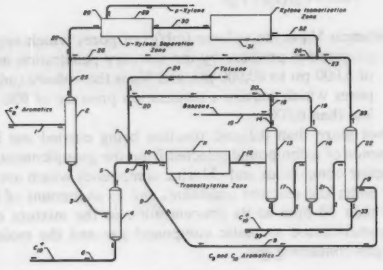
recovering cumene from the reaction products discharged from the second step.

4,341,914

TRANSALKYLATION PROCESS WITH RECYCLE OF C_{10} HYDROCARBONS

Charles V. Berger, Western Springs, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 22, 1980, Ser. No. 219,001
Int. Cl.³ C07C 5/22
U.S. Cl. 585—474 9 Claims



1. A transalkylation and isomerization process for the production and recovery of p-xylene which comprises the steps of:

(a) separating a feed stream comprising indane, C_8, C_9 and C_{10} alkylaromatic hydrocarbons, in a first fractionation zone comprising two fractionation columns into a first C_8 stream rich in C_8 alkylaromatic hydrocarbons and which stream contains less than 5 mole percent C_9+ hydrocarbons, a first C_9 stream rich in C_9 alkylaromatic hydrocarbons and a first bottoms stream rich in C_{10} alkylaromatic hydrocarbons and which stream contains at least 50 mole percent of said indane in said feed stream;

(b) passing said first C_9 stream, a first recycle stream rich in toluene and a second recycle stream comprising C_9 and C_{10} alkylaromatic hydrocarbons into a transalkylation zone maintained at transalkylation conditions to produce a transalkylation zone effluent stream comprising C_7 to C_{10} alkylaromatic hydrocarbons;

(c) separating said transalkylation zone effluent stream in a second fractionation zone to produce a light aromatic hydrocarbon stream rich in toluene and which is used as said first recycle stream, a heavy hydrocarbon stream comprising C_{10} alkylaromatics and which is rich in C_9 alkylaromatic hydrocarbons and which is used as said second recycle stream, a second C_8 stream rich in C_8 alkylaromatic hydrocarbon and a second bottoms stream rich in C_{10} alkylaromatic hydrocarbon and which is removed from said process;

(d) combining said first and second C_8 streams with a hereinafter defined third recycle stream;

(e) passing said combined streams of (d) into a paraxylene separation zone wherein paraxylene is concentrated in a paraxylene-rich product stream, which is recovered as the product stream of said process, and a paraxylene separate zone effluent stream is produced comprising metaxylene;

(f) passing said paraxylene separate zone effluent stream comprising metaxylene into a xylene isomerization zone to isomerize said effluent to produce an isomerization zone effluent stream comprising paraxylene, orthoxylene and metaxylene; and

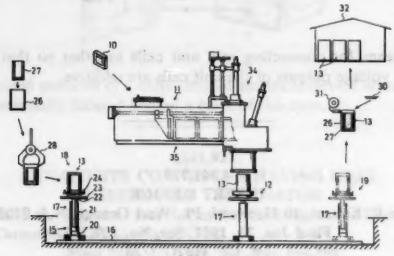
(g) recycling at least a portion of said isomerization zone effluent stream to said paraxylene separation zone as said third recycle stream of step (d).

4,341,915

APPARATUS FOR FILLING OF CONTAINER WITH RADIOACTIVE SOLID WASTES

Toshio Adachi, Nagoya, and Susumu Hiratake, Kasugai, both of Japan, assignors to Daidotokushuko Kabushikikaisha, Japan

Filed Mar. 10, 1980, Ser. No. 128,984
Claims priority, application Japan, Mar. 13, 1979, 54-28899; Feb. 12, 1980, 55-15805
Int. Cl.[3] G21F *9/30*
U.S. Cl. 373—22 4 Claims



1. An apparatus for filling a container with radioactive solid wastes, said apparatus comprising:

(i) a transfer frame having a charge port at one end and a delivery port at the other end and interiorly having a floor extending from the charge port to the delivery port so that radioactive solid wastes introduced through the charge port and placed on the floor may be laterally moved in substantially horizontal direction on the floor towards the delivery port;

(ii) a transfer means arranged within said transfer frame so that the radioactive wastes introduced through said charge port and placed on said floor may be laterally moved on the floor towards said delivery port;

(iii) a hollow furnace body interiorly having a bottom wall on which the wastes are placed and a space for melting the radioactive solid wastes while being fed in substantially horizontal direction, said space being above the bottom wall and being of great height relative to its width in the direction of substantially horizontal feed of the wastes, said furnace body having first and second side walls which are respectively provided with an inlet for introducing the radioactive solid wastes and an outlet for discharging a melt of said wastes, said second wall being opposite to the discharge port for preventing further advance of the wastes in the feed direction thereby to prevent wastes from moving through the heating space in unmelted condition, said inlet formed in the first side wall being in communication with the delivery port of the transfer frame, said bottom wall including a groove the base of which is inclined downwardly in the direction of feed of the wastes, said outlet being below the lower end of said groove;

(iv) a heating means comprising at least one plasma torch attached to said furnace body to direct heating gases used to melt the radioactive wastes into said space; and

(v) a tray, to receive a container placed thereon, disposed at a position under the outlet formed in the second side wall of said furnace body;

said transfer frame having two guide walls which extend upright from said floor and are opposed to each other so as to bound between them a space above said floor into which the solid wastes are introduced, said two guide walls extending from the charge port to the delivery port;

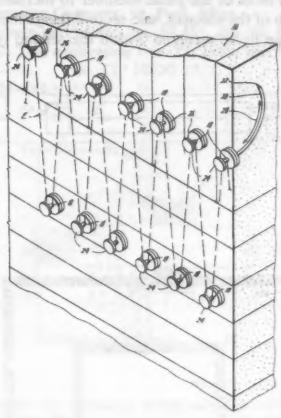
whereby the radioactive wastes placed on the floor are guided along said guide walls into the melting space within said furnace body, the wastes being melted by the heating gases in the melting space within the furnace body, and the resultant melt being poured through said outlet into an open-topped container placed on said tray.

4,341,916

ELECTRIC FURNACE INSULATION MODULE

Carlisle O. Byrd, Jr., and Mack A. Hounsel, both of Houston, Tex., assignors to Manville Service Corporation, Denver, Colo.

Filed Oct. 30, 1980, Ser. No. 202,360
Int. Cl.[3] H05B *3/66*
U.S. Cl. 373—128 60 Claims



1. A product comprising:

(a) a block of refractory fiber blanket insulation material;

(b) an electric heating element;

(c) holder member means for supporting said electric heating element;

(d) arcuate spearing means mounted with said holder member means for attaching said holder member means to said block;

(e) said spearing means comprising means for supporting said holder member means on said module independently of other supporting structure wherein said holder member may be located at any desired location on said block; and

(f) means for attaching said block to the inner wall of the electric furnace.

4,341,917

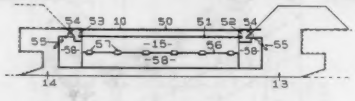
BUILDING STRUCTURAL ELEMENT

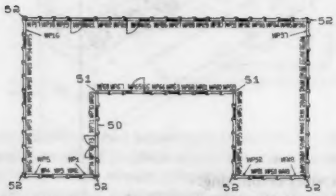
Anthony G. Martin, 12 Scattergood Pl., Spence, Australian Capital Territory, Australia

Continuation of Ser. No. 37,064, May 8, 1979, abandoned. This application May 7, 1981, Ser. No. 263,806
Claims priority, application Australia, May 10, 1978, PD4339
Int. Cl.[3] H01L *35/00;* E04C *1/10*
U.S. Cl. 136—206 14 Claims

1. A modular, concrete structural element for a building or the like structure comprising a panel member; said panel member including a pair of parallel, spaced apart side members having first and second, parallel, external faces, said panel member having a pair of edge portions extending between and along the edges of said side members to define a hollow core extending longitudinally of said panel member, each of said edge portions having flange means for providing structural strength to said structural element and said flange means being so dimensioned relative to each other so as to form a cavity with the flange means of an adjacent edge portion of an adjacent structural element to provide a concealed, weatherproof expansion joint between the adjacent structural elements, said

flange means on a first one of said edge portions comprising first and second flange members extending longitudinally along one side of said panel member, said first and second flange members being spaced to define between them a first recess which extends longitudinally along said one side of the panel member; and said flange means on a second one of said edge portions comprising third and fourth flange members extending longitudinally along the opposite side of said panel member, said third and fourth flange members being spaced to define between them a second recess which extends longitudinally along said opposing side of the panel member; said first flange member protruding outwardly of the plane of one of said external faces of the panel member to increase the structural strength of the element, said second flange member being adapted in use to be received within the second recess of an





identical structural element adjacent to said first edge portion of the panel member and said third flange member being adapted in use to be received within the first recess of a second identical structural element adjacent to said second edge portion of the panel member so that in use said first and second external faces of said panel member are coplanar with the first and second external faces respectively of the panel members of said adjacent identical structural elements.

7. A structural element as defined in claim 1, wherein one of said side members is transparent, and said hollow core incorporates means to collect solar heat energy transmitted through said transparent side member.

9. A structural element as defined in claim 7, wherein said means to collect solar heat energy includes means to convert said solar heat energy into electrical energy.

4,341,918

HIGH VOLTAGE PLANAR MULTIJUNCTION SOLAR CELL

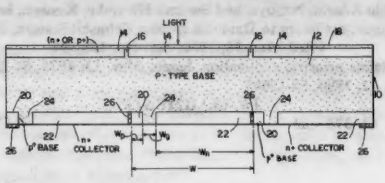
John C. Evans, Jr., Ravenna; An-Ti Chai, N. Ridgeville, and Chandra P. Goradia, Cleveland, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 24, 1980, Ser. No. 219,677
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—249 **12 Claims**

1. A high voltage multijunction solar cell comprising:

a generally planar semiconductor body of one conductivity type;

a plurality of unit cells formed within at least one surface of said semiconductor body, each said unit cell comprising a pair of doped regions of opposite conductivity type formed in said at least one surface and separated by a gap region consisting essentially of an undiffused region of said semiconductor body, each said gap region providing electrical isolation means between adjacent unit cells; and



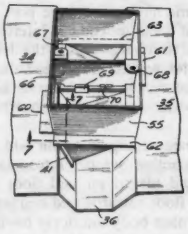
means for connecting said unit cells together so that the voltage outputs of the unit cells are additive.

4,341,919

INSERT DEVICE

John E. Kohaut, 10 Hepworth Pl., West Orange, N.J. 07052

Filed Jan. 23, 1981, Ser. No. 227,755
Int. Cl.³ H02G *3/28*
U.S. Cl. 174—48 **27 Claims**



1. An insert conduit unit for use in connection with raceway members, whereby elongated members may be passed through said raceway members and said insert conduit unit and connected to apparatus, said insert conduit unit comprising:

(a) a pair of insert conduit sections,

(b) each section having a pair of side wall members and an end wall member connecting the side wall members in spaced parallel relation and defining the bottom and one end of said section,

(c) each section being open at the other end thereof, and

(d) means connecting said sections contiguously, with their open ends in oppositely opening position,

thereby aligning said oppositely disposed open ends thereof for passage of said elongated members therethrough and through said insert conduit unit, for connection to said apparatus, said means further so connecting said sections relatively rotatably.

4,341,920

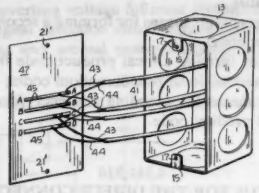
CAMOUFLAGED BUSBAR-CARRYING COVER FOR A WALL-INCASED JUNCTION-BOX

Arthur A. Reich, 1059 N. 6th St., Springfield, Ill. 62702

Filed Jan. 13, 1981, Ser. No. 224,755
Int. Cl.³ H02G *5/08*
U.S. Cl. 174—66 **4 Claims**

1. A camouflaged busbar-carrying cover for a standard in-wall-mounted junction box, comprising: a plate formed at least partly of insulating material and of a size to cover said junction box, a plurality of busbar-like elements fixed to the

rear surface of said plate so as to be insulated from each other, and means carried by the face of said plate to simulate the



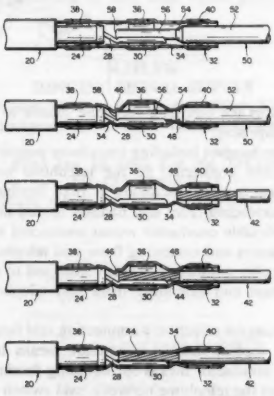
exposed portions of a conventional electrical device normally substantially incased behind a plate of this type.

4,341,921

COMPOSITE CONNECTOR HAVING HEAT SHRINKABLE TERMINATOR

Damon G. Simpson, Los Altos, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Mar. 27, 1980, Ser. No. 134,356
Int. Cl.³ H01R *4/70*
U.S. Cl. 174—84 R **10 Claims**



1. A composite electrical connector, comprising:

(a) a rigid connector body adapted for connection to a compatible connector and having at least one conductor termination portion, each said conductor termination portion comprising a terminal boss extending from said connector body and having a terminal protruding from the end thereof; and

(b) a heat-shrinkable terminator for each said conductor termination portion, each said terminator comprising a heat-shrinkable polymeric sleeve having inner, center, and outer sections in axially aligned abutting relationship; wherein

(i) said inner section contains a first thermoplastic environmental seal ring located coaxially within said sleeve;

(ii) said center section contains a fluxed solder ring located coaxially within said sleeve;

(iii) said sleeve is positioned such that said inner section and said first seal ring lie about said terminal boss and said inner section is sealed to said terminal boss by said first seal ring, and said solder ring lies about said terminal;

(iv) stop means to prevent overinsertion of a conductor entering said terminator through said outer and center sections, said stop means being integrally formed within said sleeve and located between said end of said terminal boss and said solder ring; and

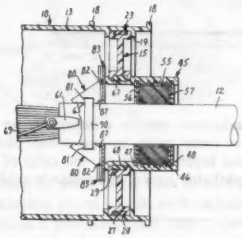
(v) guide means to correctly align a conductor entering said terminator through said outer section with respect to said terminal, said guide means being integrally formed within said sleeve and located on that side of said solder ring remote from said first seal ring.

4,341,922

STRAIN-RELIEF BRACE FOR CABLE SPLICE CASE

Ronald G. Bossard, St. Paul, and Robert B. Goodin, Brooklyn Park, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 58,451, Jul. 18, 1979, Pat. No. 4,262,167. This application Dec. 22, 1980, Ser. No. 218,968
Int. Cl.³ H02G *15/113*
U.S. Cl. 174—92 **5 Claims**



1. A device for relieving strain while a cable splice case which encloses a splice area in a communications cable of a communications system, said cable splice case having an outer shell, one end plate at each end of said case for receiving at least one cable collar, and one cable collar around each cable end, said device comprising

a horizontal portion having a plurality of downwardly projecting tangs which grip the outer sheath of said communications cable,

a vertical portion projecting upwardly from said horizontal portion for abutment against the interior end of a cable collar extending through said end plate of said cable splice case,

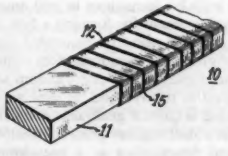
reinforcing means between said horizontal portion and said vertical portion, said reinforcing means having receiving means for receiving an element for clamping said device to said communications cable.

4,341,923

COATED ASBESTOS INSULATION TRANSFORMER WIRES

Benjamin F. Allen, Rome, Ga., assignor to General Electric Company, New York, N.Y.

Filed Oct. 14, 1980, Ser. No. 196,669
Int. Cl.³ H01B *7/08*
U.S. Cl. 174—117 R **2 Claims**



1. An insulated transformer wire comprising:

a rectangular metal conductor; an

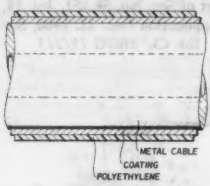
a continuous wrapping of insulating paper containing a plurality of permanent strips of a heat curable resin adhered to and extending above the surface of said paper for the protection of said paper and the lubricity of the wire during a coil winding process.

4,341,924

SUPERCONDUCTOR

William K. T. Gleim, 1250 NW. 120th St., Seattle, Wash. 98177

Filed Feb. 4, 1980, Ser. No. 118,234
Int. Cl.³ H01B *7/34*
U.S. Cl. 174—15 S **9 Claims**



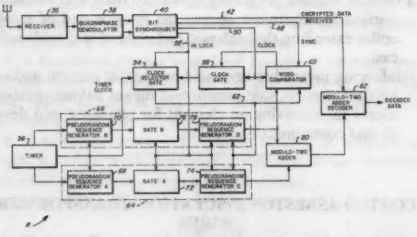
1. A superconductive article comprising an electrically normal conductive metal cable having cobalt phthalocyanine and an alkali metal layer thereupon, the ratio of alkali metal atoms to cobalt phthalocyanine molecules in said layer being about 8:1.

4,341,925

RANDOM DIGITAL ENCRYPTION SECURE COMMUNICATION SYSTEM

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and George D. Doland, Houston, Tex.

Filed Apr. 28, 1978, Ser. No. 900,841
Int. Cl.³ H04K *1/00*; H04L *9/00*
U.S. Cl. 178—22.17 **2 Claims**



1. A secure communication receiver for receiving and decoding an encrypted digital signal, comprising:

(a) means for receiving said encrypted signal wherein said means for receiving comprises

means for forming a bit sync signal indicating bit synchronization with bit transitions in said encrypted signal;

(b) first generator means for forming a first local pseudorandom code wherein said first generator means comprises:

(1) a first digital data pseudorandom sequence generator;

(2) a second digital data pseudorandom sequence generator adapted to receive said bit sync signal and wherein said second sequence generator comprises means functioning as a shift register prior to receipt of said bit sync signal and functioning as a pseudorandom sequence generator thereafter; and

(3) a gate connecting said first and said second digital data sequence generators for serial flow of digital bits from said first to said second generators, being adapted to receive said bit sync signal and wherein said gate comprises gate means responding to said bit sync signal to block flow of digital bits from said first to said second generator;

(c) second generator means for forming a second local pseudorandom code;

(d) means for forming a local product code from said first and said second local pseudorandom codes; and

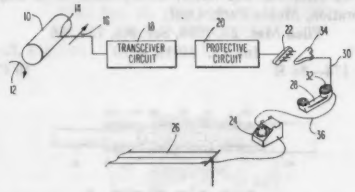
(e) decoder means for decoding said encrypted signal with said local product code.

4,341,926

APPARATUS FOR THE DIRECT CONNECTION OF ANCILLARY EQUIPMENT TO THE TELEPHONE NETWORK

Douglas R. Chester, Orlando, Fla., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 8, 1980, Ser. No. 147,723
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2 C **11 Claims**



1. Apparatus for coupling facsimile means to a telephone network comprising:

a telephone handset including transducer means and connective means connected to the telephone network, said telephone handset including a first flexible conductor means extending from said handset to said network;

a second flexible conductor means connected to said transducer means and extending from said telephone handset;

a third flexible conductor means connected to said connective means and extending from said telephone handset; and

switch means for selectively connecting said facsimile means or said second flexible conductor means to said third flexible conductor means for coupling facsimile or voice signals to the telephone network, said switch means being controlled by operation of said facsimile means.

4,341,927

DATA TRANSMISSION APPARATUS

Tsuyoshi Shinoi, Yokohamashi, and Fumikazu Hamatani, Kawasakishi, both of Japan, assignors to TIE/Communications, Inc., Shelton, Conn. and Nippon Tsushin Kogyo K.K., Kawasaki, Japan

Continuation of Ser. No. 7,899, Jan. 30, 1979, abandoned. This application Aug. 11, 1980, Ser. No. 176,734
Claims priority, application Japan, May 2, 1978, 53-52269
Int. Cl.³ H04L *25/00*
U.S. Cl. 179—2 DP **8 Claims**

1. A data transmitting and receiving system, comprising:

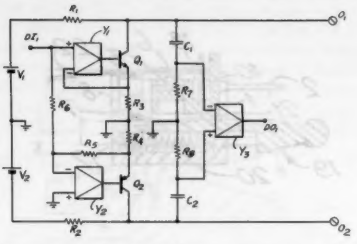
(1) data signal generating circuit means operative to generate data signals and having output terminals connected between first and second power-carrying conductors at a first power transmitting site, comprising:

(a) a non-inverting voltage follower circuit means having first and second input terminals and first and second output terminals; and

(b) an inverting voltage follower circuit means having first and second input terminals and first and second output terminals, said second output terminals being connected to a common ground and said first output

terminals being connected to said first and second power-carrying conductors at said site, said first input terminals being connected through input network means in said inverting voltage follower circuit means; and

(2) data signal detection circuit means connected between said first and second power-carrying conductors at a



second power receiving site at which a variable load is connected across said power carrying conductors, and operative to receive each of said data signals as two inputs of equal magnitude and opposite polarity and, in response thereto, to generate data signals corresponding to the data signals generated by said data signal generating circuit means.

4,341,928

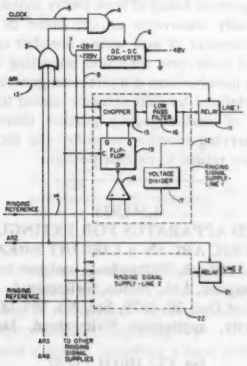
RINGING SIGNAL SUPPLY

Mark V. Stanson, Ottawa, and Garth I. Riley, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jan. 28, 1981, Ser. No. 229,166

Int. Cl.³ H04M 5/12

U.S. Cl. 179—51 AA **7 Claims**



1. A ringing signal supply comprising:

a low pass filter whose output constitutes the output of the ringing signal supply;

switching means for selectively connecting either of two d.c. supply voltages to an input of said low pass filter;

means for comparing a representation of a signal at said output with a reference ringing signal; and

means, comprising a bistable device, responsive to the comparing means for controlling said switching means in dependence upon the comparison to produce a ringing signal, corresponding to said reference ringing signal, at said output;

the switching means being responsive to each of the two states of the bistable device to connect a respective one of the two d.c. supply voltages to the input of the low pass filter.

4,341,929

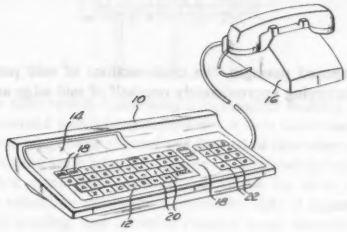
MEMORY ACCESSING SYSTEM

Richard D. Alexander, Santa Ana; John L. Christofferson, Vista, and William H. Ward, Jr., Santa Ana, all of Calif., assignors to Zelex, Inc., Santa Ana, Calif.

Filed Mar. 20, 1980, Ser. No. 132,338

Int. Cl.³ H04M 1/274

U.S. Cl. 179—90 B **21 Claims**



1. A method of addressing data in an electronic memory, said data including plural words, each including a first plurality of characters in a predetermined order, comprising:

inputting a series of characters, one character at a time, to provide a second plurality of characters, said second plurality increasing by one each time an additional character is input;

investigating said first plurality of characters in each of said plural words, by comparing, after each character of said series of second plurality of characters has been input, said series of second plurality of characters with all subsets of characters in said predetermined order in said first plurality of characters, each of said subsets equal in number of characters to said series of second plurality of characters; and

providing an electrical signal output when said series of second plurality of characters input during said investigating step is found to uniquely match only one of said plural words.

4,341,930

ELECTRODYNAMIC LOUDSPEAKER

Günter Steinle, Mönchweiler, and Edwin Lässle, Langenau, both of Fed. Rep. of Germany, assignors to Dual Gebrüder Steidinger GmbH & Co., St. Georgen, Fed. Rep. of Germany

Filed Mar. 14, 1980, Ser. No. 130,502

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1979, 2909880

Int. Cl.³ H04R 9/06

U.S. Cl. 179—115.5 R **3 Claims**

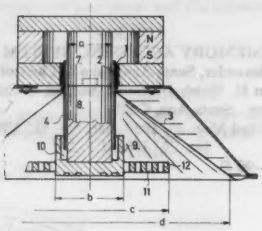
1. An electrodynamic loudspeaker with a cone diaphragm and a body arranged concentrically within the cone diaphragm in order to influence the acoustic radiation, the cone diaphragm defining a cone opening, said body comprises

a disc-shaped covering which is arranged in the vicinity of a plane of the edge of the loudspeaker, the covering having a diameter equal to about one-half of the diameter of the cone opening,

said covering has:

a central part of a size equal to approximately one and a half times the diameter of the magnet core of the moving coil, said central part forms a closed surface; and

an edge area, constituting the rest of said covering other than said said central part, being formed with axially



disposed passages, the cross-sections of said passages occupying approximately one-half of said edge area.

4,341,931

SWITCHING DEVICE COMPRISING AT LEAST ONE CONTACT MEMBER MOUNTED PIVOTALLY ABOUT AXIS PARALLEL TO THE AXIS OF A CASING, AGAINST THE ACTION OF A LEAF SPRING MOUNTED IN CURVED POSITION BETWEEN SAID CASING AND SAID MEMBER

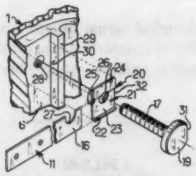
Marcel L. A. Paulve, Moulin des Serres, 83490 Le Muy, France

Filed Dec. 5, 1980, Ser. No. 213,721

Claims priority, application France, Dec. 7, 1979, 79 30113; Oct. 16, 1980, 80 22143

Int. Cl.³ H01H *19/62*

U.S. Cl. 200—30 A **10 Claims**



1. An improvement in an electric switching device, of the type comprising essentially at least one leaf spring mounted in curved position between the internal surface of a casing and the opposite surface of a member mounted pivotally about an axis parallel to the axis of the casing, under the action of an actuating member against the action of the said spring, said casing being provided with a stationary electric contact device and the movable member being provided with a contact element forming a movable contact intended to cooperate with one of the said stationary contacts, the said leaf spring being fixed at one end on the internal surface of the casing by the head of a screw with a tightening nut, wherein a stop member is interposed between the said spring end to be fixed and the said internal surface of the casing and provided with a recess of a shape complementary to the shape of the said spring end so as to lock the said spring end in the said recess, and stop means are provided integral with the said casing and comprising a flat stop surface perpendicular to the internal surface of the casing, upon which bears a planar lateral surface of the head.

4,341,932

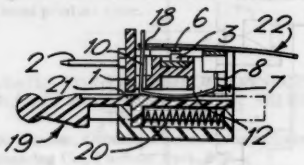
ELECTRIC SWITCHES

Terance J. C. Foster, Buxton, England, assignor to Otter Controls Limited, England

Filed Oct. 3, 1980, Ser. No. 193,447

Int. Cl.³ H01H *21/40*

U.S. Cl. 200—74 **18 Claims**



1. In an electric switch comprising a stationary contact and a movable contact, the movable contact being mounted on a carrying member for movement between a first and a second position, the switch further comprising actuator means including a stressed member of resilient sheet material movable with snap-action between two configurations to control the making and breaking of the contacts, the actuator means defining a plane, an improved latching means for restraining return movement of the contact carrying member after the actuator member has snap-acted in a first direction comprising:

a spring member having an arm extending generally transversely to the plane defined by the actuator means, said arm having a portion configured to engage the contact carrying member in the second position of the movable contact to prevent return of the movable contact to the first position, said spring member further comprising an operating portion integral with said arm and extending therefrom in a direction which is generally parallel to the plane defined by the actuator means, said spring member operating portion being at least partly movable in a direction generally transverse to the plane of the actuator means, movement of said spring member operating portion in said transverse direction imparting movement to said spring member arm in a direction generally parallel to the plane defined by said actuator means to cause disengagement of said engaging portion thereof from the contact carrying member whereby the movable switch contact may return to its first position.

4,341,933

METHOD AND APPARATUS FOR EXTINGUISHING AN ELECTRIC ARC IN A CIRCUIT BREAKER

Jakob Keller, Fislisbach, Switzerland, assignor to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Dec. 20, 1979, Ser. No. 105,737

Claims priority, application Switzerland, Dec. 20, 1978, 12924/78

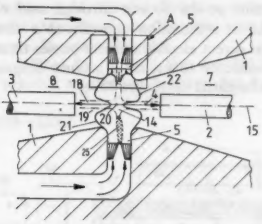
Int. Cl.³ H01H *33/70*

U.S. Cl. 200—148 R **15 Claims**

1. A method for extinguishing the electric arc drawn between a pair of electrical contacts included within a gas-blast circuit breaker as the electrical contacts separate from each other along a common axis during the opening operation of the circuit breaker, said circuit breaker including a hollow body of electrically insulating material having an internal chamber in which said electrical contacts are situated, and having inlet canal means at least partially surrounding the region in which separation of the contacts occurs for introducing gaseous extinguishing medium into the chamber and into the space between the separating electrical contacts, said extinguishing medium being deflected by boundary surfaces defining said chamber so as to be subsequently exhausted from the chamber substantially parallel to said common axis, said method comprising the steps

conducting said extinguishing medium into said canal means as said contacts are separated;

producing a variation in the flow resistance across the flow cross-section in said canal means by means of at least one flow resistance element such that the flow resistance in the vicinity of a theoretical stagnation streamline is less than the flow resistance at the inlet of the at least one flow



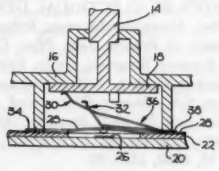
element and such that the difference between the local velocity at a point on the theoretical stagnation streamline and the mean velocity of the velocity profile development at said point exceeds the corresponding difference at the equivalent point in a circuit breaker without said flow resistance element by an amount which is at least ten percent of the mean velocity at said point.

4,341,934

ACTUATOR FOR KEYBOARD SWITCHES

Michael Muller, Newport Beach, Calif., assignor to The Keyboard Company, Garden Grove, Calif.

Filed Nov. 21, 1980, Ser. No. 208,672
Int. Cl.³ H01H *3/12*
U.S. Cl. 200—159 A **11 Claims**



1. An improved actuator assembly for use in a key, as part of a keyboard, for closing a first electrical contact and a second electrical contact in response to the depression of said key by a user, said improvement comprising:

a first actuator member including a base portion and a free end;

a second actuator member including a base portion and a free end;

said first and second actuator members being integrally formed from the same sheet of metal and joined thereto at said base portion;

said first actuator member being bent at its base such that prior to the assembly of said key the entire length of said first actuator member extends to a first side of the plane of said sheet of metal;

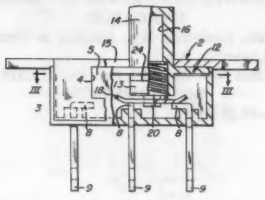
said second actuator member being bent at its base and at a point intermediate said base and its free end such that prior to the assembly of said key only the free end of said second actuator member extends to said first side of the plane of said sheet of metal.

4,341,935

SLIDE SWITCH

Leo J. M. Josemans, Farmville, Va., assignor to Stackpole Components Company, Raleigh, N.C.

Filed Jul. 17, 1980, Ser. No. 169,665
Int. Cl.³ H01H *15/04*
U.S. Cl. 200—252 **2 Claims**



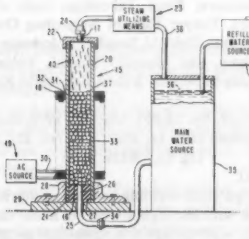
1. A slide switch comprising a rectangular housing having a top provided with a longitudinal slot, a slide inside the housing movable lengthwise thereof and formed of insulating material, an actuating knob integral with the slide extending out through said slot, a movable metal contact below the slide, a pair of hooks extending downwardly from the slide at opposite sides of said housing, said movable contact being provided with a pair of openings through which said hooks extend with the lower ends of the hooks extending laterally beneath the contact for locking it to the slide, the slide above the contact being provided with a downwardly opening bore, a spring in said bore pressing said contact downwardly, the slide and knob and spring and movable contact forming a unitary subassembly, a pair of stationary electric contacts mounted in the bottom of said housing in positions to be bridged by said movable contact when the slide is in a predetermined position in the housing, said lower ends of the hooks being spaced apart laterally of the lengthwise path of movement of said slide and far enough to freely pass one of said stationary contacts when the slide moves said movable contact away from the adjacent stationary contact, and electric terminals joined to said stationary contacts and extending out of the housing.

4,341,936

ELECTROMAGNETIC INDUCTION ENERGY CONVERTER

George C. Virgin, North Rd., Tivoli, N.Y. 12583

Filed Dec. 17, 1979, Ser. No. 104,367
Int. Cl.³ H05B *5/08*
U.S. Cl. 219—10.51 **9 Claims**



1. An electromagnetic induction energy converter adapted for connection to a source of alternating electrical current including:

a plurality of magnetizable cores, each including an inlet for a fluid to be heated, and an outlet;

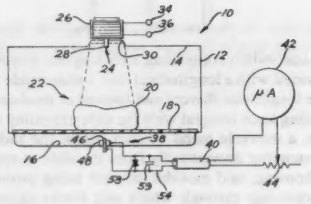
a source of fluid connected to each said inlet, effective to maintain the fluid in contact with each said magnetizable core without reaching said outlet; and

an induction heating coil surrounding each of said cores, all of said coils being connected together in an electrical network connectable to a source of alternating electrical current whereby each of said plurality of magnetizable cores is heated to produce vapor at said outlet.

4,341,937
MICROWAVE OVEN COOKING PROGRESS INDICATOR

James E. Staats, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 28, 1980, Ser. No. 211,019
Int. Cl.³ H05B 6/28
U.S. Cl. 219—10.55 M **6 Claims**



1. In a microwave oven of the type having a cooking cavity bounded by conductive walls, and which employs electromagnetic field strength sensing within the cavity, the improvement comprising:

a support for supporting a food load at an intermediate region within the cavity;

a feed point along one wall of the cavity for introducing microwave energy into the cavity in a direction generally away from the one wall and toward said intermediate region where the food is supported within the cavity; and

an electromagnetic field strength sensor located along a wall of the cavity opposite said feed point such that the intermediate region where the food load is supported within the cavity lies substantially directly between said feed point and said field strength sensor; whereby sensed electromagnetic field strength provides a sensitive measure of the amount of microwave energy not absorbed by the food load, but which rather flows around and through the food load.

4,341,938
METHOD AND APPARATUS FOR SEAM-WELDING STEEL PIPES

Hiroyoshi Matsubara; Kenji Takeshige, both of Fukuyama; Tatsumi Osuka, Tokyo; Takashi Nagamine; Osamu Hirano, both of Fukuyama; Jinkichi Tanaka, Yokohama; Itaru Watanabe, Yokohama, and Motoaki Suzuki, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 24,697, Mar. 28, 1979, abandoned. This application Dec. 12, 1980, Ser. No. 215,757
Int. Cl.³ B23K 9/02
U.S. Cl. 219—61 **13 Claims**

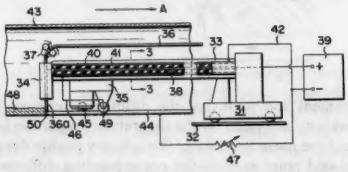
1. In a steel pipe seam-welding method comprising conducting an electrode wire through a welding head; causing an end of the electrode wire to face a longitudinal groove of a steel pipe which is to be welded together; setting the welding head above said groove; and supplying a first direct electric current to the welding head from a terminal of a power source through an elongated electrically insulative covered conductor extending lengthwise of the steel pipe, thereby welding said groove, said first direct electric current creating a first magnetic field around said elongated conductor,

the improvement comprising:

surrounding said elongated conductor with an elongated conductive enclosure tube which is substantially coaxial with said elongated conductor, said enclosure tube and said elongated conductor being located within said steel pipe and extending from the vicinity of said welding head and being substantially coaxial with said steel pipe;

electrically connecting an end portion of said enclosure tube in the vicinity of said welding head to a portion of said steel pipe located in the vicinity of said welding head;

supplying a second direct electric current from another terminal of said power source through said elongated enclosure tube in a direction opposite to a direction in which the first direct electric current passes through said elongated conductor to create a second magnetic field around said elongated enclosure tube;



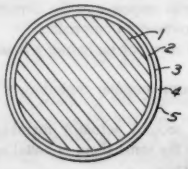
supplying a direct electric current to a portion of said steel pipe remote from said welding head from said another terminal of said power source to conduct direct electric current through said steel pipe in said direction opposite to that in which the first direct current passes through said elongated conductor; and

adjustably controlling the magnitudes of said direct electric currents flowing through said elongated enclosure tube and said steel pipe to thereby control said second magnetic field so that it substantially cancels, at least at said steel pipe, said first magnetic field which has lines of force in a direction opposite to said second magnetic field.

4,341,939
WIRE ELECTRODE FOR CUTTING AN ELECTRODE WORKPIECE BY ELECTRICAL DISCHARGES

Jean-Paul Briffod, Monnetier-Mornex; Roland Martin, Dingy en Vuache, both of France; Jean Pfau, Collonge-Bellerive, Switzerland; Bernard Bommeli, Dully, Switzerland, and Danielle Schnellmann, Geneva, Switzerland, assignors to Ateliers des Charmilles, S.A., Geneva, Switzerland

Filed Sep. 22, 1980, Ser. No. 189,675
Claims priority, application Switzerland, Oct. 11, 1979, 9170/79; Mar. 25, 1980, 2318/80
Int. Cl.³ B23P 1/12
U.S. Cl. 219—69 W **18 Claims**



1. An electrode wire for cutting a workpiece by electrical discharges, said electrode wire comprising a core of electrically conductive first material and a coating on said core of a second material having a vaporization and melting temperature lower than that of the first material, said coating comprising at least one layer of said second material provided with a superficial thin film of a non-metallic third material, said thin film having a thickness such as to display semi-conductor

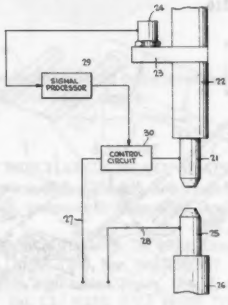
electrical characteristics when said film is placed in contact with a surface of a workpiece and when a voltage of a few volts is applied across said wire and said workpiece and such as to become electrically conductive when the voltage applied thereacross is comprised between said few volts and about 100 volts.

4,341,940

MONITORING RESISTANCE WELDING

Jacques Defourny, St. Nicolas, Belgium, assignor to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

Filed Jul. 7, 1980, Ser. No. 166,617
Claims priority, application Belgium, Jul. 6, 1979, 877559
Int. Cl.³ B23K *11/24*
U.S. Cl. 219—117.1 **9 Claims**



1. A method of monitoring the operation of a resistance welding machine having two electrode supports and two electrodes mounted on the respective supports, means for supplying electrical power to the electrodes, and means for applying pressure along a given axis via the supports and the electrodes to members being welded together between the electrodes, the method comprising the steps of making a series of welds, detecting—during each period in which electrical power is supplied to the electrodes—whether the weld is subject to flash, determining the frequency with which flash occurs in the series of welds, determining the quality of the operation of the machine as a function of the frequency of occurrence of flash, and adjusting the electrical power in such a way as to maintain the frequency of occurrence of flash within given limits, by increasing the power if the frequency is below a given lower limit and by decreasing the power if the frequency is above a given upper limit.

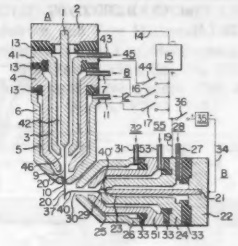
4,341,941

METHOD OF OPERATING A PLASMA GENERATING APPARATUS

Haruo Tateno, Kiyose, Japan, assignor to Rikagaku Kenkyusho, Wako, Japan

Filed Feb. 26, 1980, Ser. No. 124,938
Claims priority, application Japan, Mar. 1, 1979, 54-23629; Mar. 1, 1979, 54-23630
Int. Cl.³ B23K *9/00*
U.S. Cl. 219—121 PU **1 Claim**

1. A method of operating a single plasma torch generating apparatus which comprises determining the thermal loss at the outermost bushing by operating said torch structure with a gas flowing only in the outside channel thereby causing a "hair-pin arc" to appear from the cathode rod to a workpiece; relocating the workpiece to such a position that no "hair-pin arc appears; applying a magnetic force perpendicular to the space between the throttle of the outermost bushing and the throttle of the inside bushing so as to cause a thermal loss equal to the thermal loss caused by the "hair-pin" arc; measuring the thermal loss while increasing the flow rate of a first gas in the inside bushing and accordingly decreasing the flow rate of a second gas in the outside bearing, plotting the thermal loss to the inside gas flow rate curve to determine the coordinate of the valley point on the curve; and operating said torch structure by adjusting and



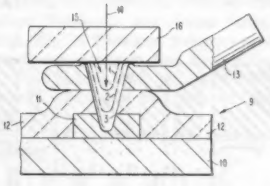
maintaining the flow rate of the first gas equal to or larger than the coordinate of the valley point and the flow rate of the second gas equal to the remainder when subtracting the flow rate of the first gas from the fixed total flow rate of first and second gases, so as to maintain the electric arc of the torch unit in alignment with the center axis of said torch unit.

4,341,942

METHOD OF BONDING WIRES TO PASSIVATED CHIP MICROCIRCUIT CONDUCTORS

Praveen Chaudhari, Briarcliff Manor; John B. Kiessling; David J. Perlman, both of Wappingers Falls; Eugene E. Tynan, Mahopac Falls, and Robert J. von Gutfeld, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 956,158, Oct. 31, 1978. This application Jun. 6, 1980, Ser. No. 157,628
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LD **12 Claims**



1. A method of bonding a separate metallic wire to a metallic conductor deposited upon a substrate and covered by an insulating layer comprising:

positioning said wire upon said insulating layer above said conductor and mechanically retaining said wire in intimate contact with said insulating layer during a subsequent drilling step,

directing an initial beam of predetermined energy at a point on said wire to drill a hole through said wire and said insulating layer to said conductor, and

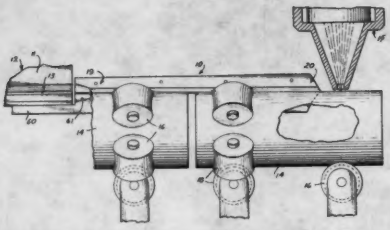
subsequently directing a subsequent beam of less energy than said initial beam upon the periphery of said hole in said wire only to melt metal from said wire down into said hole and to bond said wire to said conductor, whereby a low electrical resistance bond is provided between said wire and said conductor, said bond having enhanced mechanical strength and reduced electrical resistance as the result of melting metal down into said hole.

4,341,943

METHOD OF BUTT WELDING SHEET METAL

Carl J. Nilsen, Hopatcong, N.J., assignor to SWS Incorporated, Landing, N.J.

Division of Ser. No. 88,197, Oct. 23, 1979, Pat. No. 4,272,004.
This application Feb. 13, 1981, Ser. No. 234,081
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LD 4 Claims



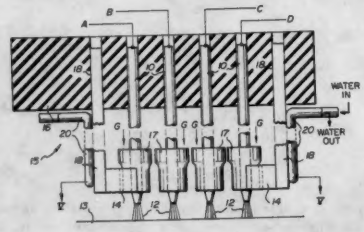
1. The method of butt welding opposed edges of sheet material, in a continuous process, comprising the steps of, urging said edges into vertically spaced overlapping relationship with each other under pressure, causing said edges to converge toward each other while in said overlapping relationship as said edges are being continuously advanced in a longitudinal direction, spreading said edges out of overlapping relationship against the urging pressure so that said edges intersect each other in intimate abutting engagement at a point of convergence and welding said edges which are in intimate engagement at the point of convergence to form a butt welded seam.

4,341,944

REDUCTION OF ARC BLOW IN MULTI-ELECTRODE WELDING

Nixon B. Breen, Kingston, Canada, assignor to Alcan Research and Development Limited, Montreal, Canada

Filed Dec. 8, 1978, Ser. No. 967,847
Claims priority, application Canada, Dec. 21, 1977, 293606
Int. Cl.³ B23K 9/08
U.S. Cl. 219—123 17 Claims



1. A multi-electrode welding gun for arc welding a metallic workpiece comprising

(a) a plurality of spaced welding electrodes, each producing an independent arc and having an arc-producing end, arranged in a row with a first one of said electrodes at one end of the row and a second one of said electrodes at the other end of the row;

(b) housing means for holding said row of electrodes; and

(c) a pair of magnetically permeable shunts respectively disposed adjacent the arc-producing ends of said first and second electrodes for reducing inward deviation of the arcs at the ends of said row.

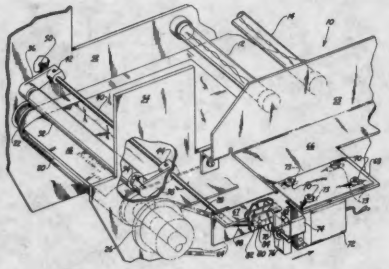
16. A method of reducing arc blow in the multi-electrode welding of a metallic workpiece, in which a plurality of welding arcs are produced by a welding gun having a plurality of closely spaced electrodes arranged in a row with their longitudinal axes generally parallel, which method comprises locating a shunt made of magnetically permeable material adjacent the arc-producing tip of the electrode at each end of the row in such a position that inward deviation of the arcs at each end of the row caused by magnetic attraction between the arcs is reduced or eliminated.

4,341,945

FIRE EXTINGUISHING DEVICE FOR ELECTROPHOTOCOPIER

Frederick J. Pelda, White Plains, N.Y., and Eugene A. Wirth, Huntington, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 31, 1979, Ser. No. 108,607
Int. Cl.³ H05B 1/02
U.S. Cl. 219—216 6 Claims



1. A device for extinguishing fires on a copy paper exiting a heat fusing apparatus in an electrophotocopying machine, comprising:

a heat resistant roller movably mounted above and in contact with a copy paper conveyor associated with and located downstream of the heat fusing apparatus;

means for lifting said roller out of contact with said conveyor when the print cycle for said electrophotocopying machine is energized;

means for maintaining said roller out of contact with said conveyer during the copying operation; and

means for moving said roller into rolling contact with said conveyer when a copy paper fails to clear the fusing apparatus within a predetermined period of time, whereby any fire of the copy paper is extinguished.

4,341,946

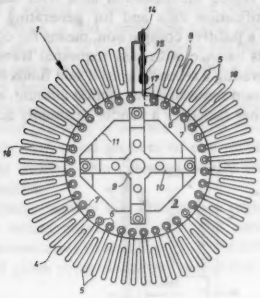
ELECTRICAL RESISTANCE HEATING ELEMENT

Helmut Ohnmacht, and Klaus Meywald, both of Kandel, Fed. Rep. of Germany, assignors to Fritz Eichenauer GmbH & Co. KG, Kandel, Fed. Rep. of Germany

Filed Nov. 3, 1980, Ser. No. 203,483
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944132
Int. Cl.³ H05B 3/06; F24H 3/00
U.S. Cl. 219—375 8 Claims

1. An electrical resistance heating element, for use in heating flowing gaseous media, comprising a heating conductor support of insulating material having a boundary edge with an essentially circular contour and a heating conductor of resistance wire which is sinuously coiled to form loops having inner and outer loop ends and loop legs, the loops being circularly arranged about said heating conductor support substantially in a plane, at least some of the inner loop ends being directly secured to the heating conductor support in the vicinity of said boundary edge, the heating conductor support being con-

structed as a flat plate substantially co-planar with the loops of the heating conductor, and the outer loop ends remote from



the heating conductor support being arranged in a self-supporting manner without fixing means.

4,341,947

GLOW DISCHARGE HEATING APPARATUS

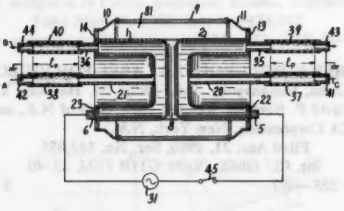
Hirotsugu Komura; Shigeo Ueguri, and Youichiro Tabata, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Division of Ser. No. 6,780, Jan. 26, 1979. This application May 22, 1980, Ser. No. 152,507

Claims priority, application Japan, Feb. 7, 1978, 53-13090

Int. Cl.³ B23K *9/32;* H05B *7/18*

U.S. Cl. 219—383 **15 Claims**



12. A glow discharge heating apparatus, comprising:

a pair of metallic discharge electrodes electrically biased in use to develop a glow discharge therebetween, one of said discharge electrodes operating as a cathode and defining a fluid conduit having an inlet and an outlet for flowing a fluid therethrough and for heating the fluid when said pair of discharge electrodes are electrically biased to develop a glow discharge therebetween;

a pair of electrically insulative fluid conduit sections each connected to a respective one of the cathode discharge electrode inlet and outlet for defining electrically insulative extensions of the fluid conduit through said cathode discharge electrode;

metallic fluid conduit sections connected to respective end portions of said electrically insulative fluid conduit sections remote from said cathode discharge electrode for defining electrically conductive extension of the fluid conduit through said cathode electrode and said electrically insulative fluid conduit sections;

means for grounding said metallic fluid conduit sections to prevent electrical shock upon contact with said metallic fluid conduit sections; and

wherein said pair of electrically insulative fluid conduit sections are sufficiently long to reduce a leakage current from said discharge electrodes through said electrically insulative fluid conduit sections to ground to a value less than a certain predetermined current value.

4,341,948

APPARATUS WITH BUILT-IN HEATING DEVICE FOR DISINFECTING CONTACT LENSES

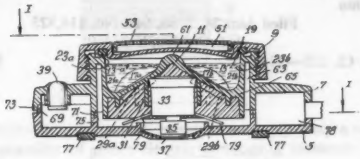
Staffan Sundström, and Tore Herlestam, both of Helsingborg, Sweden, assignors to AB Leo, Helsingborg, Sweden

Filed Feb. 2, 1981, Ser. No. 230,704

Claims priority, application Sweden, Feb. 4, 1980, 80009250

Int. Cl.³ F27D *11/02*

U.S. Cl. 219—521 **10 Claims**



1. Apparatus for disinfecting contact lenses by heating, comprising a reservoir adapted for holding a liquid and having a tight lid together with a heating device for heating of liquid therein, wherein the reservoir comprises a raised middle part or bridge for dividing said reservoir into two separate chambers or wells, said raised middle part being equipped with at least one hollow recess at its top, which enables liquid to communicate between the chambers in such a way that spillage of liquid is avoided when a lens is removed from either of said chambers, said raised middle part having side-walls, and having a built-in heating device for heating of the liquid in said chambers, said heating device being located adjacent to each of said side-walls for heating of liquid in each of said chambers of said reservoir, said heating device being of the electric resistance type.

4,341,949

ELECTRICAL HEATING APPARATUS WITH A HEATING ELEMENT OF PTC MATERIAL

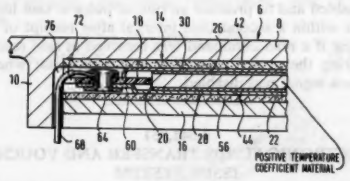
Herbert Steiner, Traunstein, and Johann Magg, St. Georgen, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 6, 1980, Ser. No. 175,637

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2932026

Int. Cl.³ H05B *3/12, 3/36*

U.S. Cl. 219—553 **13 Claims**



1. Electrical heating apparatus, comprising a frame formed of insulating material having an opening formed therethrough, a heating element formed of positive temperature coefficient material having two opposing outer surfaces and being disposed in said opening formed in said frame, an electrically-conducting current supply contact layer disposed on each of said two opposing outer surfaces of said heating element, an electrically conducting current input electrode plate formed of yieldable material and being disposed in electrical contact on the

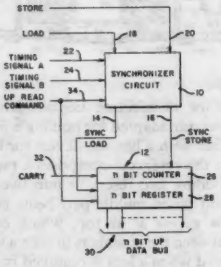
outer surface of each of said contact layers, said electrode plates being anchored in said frame forming an integral structural unit enclosing said heating element, and a heat conducting plate formed of electrically insulating material disposed on each of said electrode plates receiving heat transferred through said contact layers.

4,341,950

METHOD AND CIRCUITRY FOR SYNCHRONIZING THE READ AND UPDATE FUNCTIONS OF A TIMER/COUNTER CIRCUIT

Ronald H. Kyles, Colorado Springs, and Richard B. Woodard, Elbert, both of Colo., assignors to NCR Corporation, Dayton, Ohio

Filed Jan. 24, 1980, Ser. No. 114,925
Int. Cl.³ H03K *21/30*
U.S. Cl. 235—92 EA **8 Claims**



1. A synchronizer circuit for controlling the counting operation of an associated timer/counter circuit which is suitable for use in a microcomputer system to perform various timing and counting functions, said synchronizer circuit comprising:

a load input for receiving load pulses from an external source;

a load output;

a read input for receiving read commands from an external source;

a clock input for receiving a clock signal from an external source, said clock signal being arranged to periodically oscillate between a first logic state and a second logic state and to be disabled for a set period of time prior to and after a load pulse; and

search means for monitoring said read input for receipt of a read command, said search means being operable to produce an output pulse at said load output within a first time interval after receipt of a load pulse if a read command was not received at said read input during the period preceding said load pulse when said clock signal was disabled and to produce an output pulse at said load output within a second time interval after receipt of a load pulse if a read command was received at said read input during the period preceding said load pulse when said clock signal was disabled.

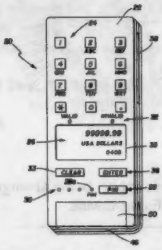
4,341,951

ELECTRONIC FUNDS TRANSFER AND VOUCHER ISSUE SYSTEM

William M. Benton, Rte. 1, Box 191, Middleburg, Va. 22117

Filed Jul. 2, 1980, Ser. No. 166,689
Int. Cl.³ G06F *15/30*
U.S. Cl. 235—379 **13 Claims**

1. An apparatus for transferring funds data in lieu of cash, comprising a portable unit to be carried by a vendee, said portable unit including a keyboard for manually entering transaction and identification data, terminal means accessible only by an authorized institution for receiving an initial funds balance; means coupled to said terminal means for storing a funds balance, means responsive to said keyboard for storing a requested transaction amount, means for storing vendee identification data issued by said institution, means responsive to said keyboard for storing vendee entered identification data, means for comparing said stored identification data with said keyboard entered identification data and for generating a first signal in response to a positive comparison, means for comparing said stored funds balance with said requested transaction amount and for generating a second signal if said funds balance is at least as large as said requested transaction amount, an inlet for receiving a voucher issued by a vendor, manually actuated



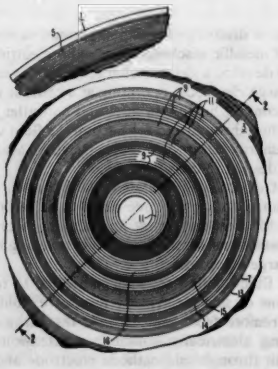
printing roll means within said inlet for printing encoded identification data onto said voucher to verify the transaction, means for maintaining said printing roll means normally out of contact with said voucher within said inlet, means for manually moving said printing roll means into contact with said voucher, means responsive to said manual means and to said first and second signals for updating said stored funds balance by said requested transaction amount, and display means for displaying said stored funds balance and said requested transaction amount.

4,341,952

VARIABLE PITCH GROOVED LABEL FOR VIDEO DISC

Gunter John, Indianapolis, Ind.; Philip M. Heyman, Trenton, and David P. Bortfeld, Kendall Park, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,855
Int. Cl.³ G06K *19/06;* G11B *7/24, 23/40*
U.S. Cl. 235—487 **6 Claims**



1. A disc record for storing information signals of a given program, said disc record comprising:

a first annular area on a surface of said disc having an information track therein comprising elements corresponding to the information signals of said given program stored on said disc record; and

a second annular area on said surface of said disc having a continuous spiral groove formed therein, said second annular area comprising a first plurality of surface regions and a second plurality of surface regions;

the portions of said continuous spiral groove formed in said first plurality of surface regions having a first spiral pitch, said spiral groove of said first pitch deflecting light incident thereon in a first direction;

the portions of said continuous spiral groove formed in said second plurality of surface regions having a second spiral pitch, said spiral grooves of said second pitch deflecting light incident thereon substantially away from said first direction;

the arrangement of said first surface regions with respect to the arrangement of said second surface regions being representative of the identity of the information signals of said given program stored in said first annular area.

4,341,953

FOCUS DETECTING SYSTEM

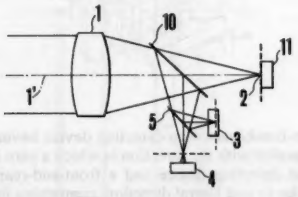
Shinji Sakai; Nobuhiko Shinoda; Takao Kinoshita, all of Tokyo; Takashi Kawabata, Kamakura; Nozomu Kitagishi, Kawasaki; Kazuya Hosoe, Machida, and Tadashi Ito, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1980, Ser. No. 151,533

Claims priority, application Japan, May 23, 1979, 54-63376

Int. Cl.³ G01J *1/20*

U.S. Cl. 250—204 **64 Claims**



1. A focus detecting system for detecting focusing state of an image forming optical system relative to an object, said optical system having a predetermined focal plane, and said focus detecting system comprising:

(A) means for detecting imaging states of an object image formed by said optical system at first and second positions optically equivalent to before and behind said focal plane of the optical system and at a third position optically equivalent to said focal plane, said detecting means producing first, second and third signals corresponding to the imaging states of the object image at said first, second and third positions, respectively; and

(B) means for deciding the focusing state of said optical system relative to the object on the basis of said first, second and third signals produced by said detecting means, said deciding means being arranged to form a fourth signal on the basis of said first and second signals and to decide the focusing state by using the fourth signal together with said third signal.

4,341,954

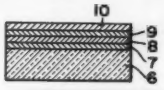
PHOTO-ELECTRIC CONVERTING APPARATUS

Yoshihiko Mizushima, Fuchu; Akitsu Takeda, Tokyo; Kazumi Komiya, Yokosuka; Masahiro Sakaue, Hachiohji; Toshio Ogino, Higashiyamato; Hideo Itoh, Tokyo, and Masayoshi Oka, Kashiwa, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp. and Origin Electric Co., Ltd., both of Tokyo, Japan

Filed Feb. 6, 1980, Ser. No. 118,907

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—211 J **8 Claims**



1. A photo-electric converting apparatus comprising a substrate, a plurality of photo-electric converting elements arranged on said substrate said photo-electric converting elements including electrode layers at least one of which is transparent and a semiconductor film layer interposed between said electrode layers and having a rectifying contact or junction with the electrode layers, capacitive means arranged in parallel with said photoelectric converting elements, respectively, to form circuits for storing electric signals corresponding to light information, and a read-out arranged to include the above capacitive means in common with said respective circuits, with light under such condition that substantially no voltage is applied across the electrode layers of said photoelectric converting elements and said respective capacitive means are electrically charged with the photo-current produced at the outputs of the respective photo-electric converting elements under the action of the electromotive force induced at said rectifying contact or junction of the respective photoelectric converting elements, with its higher energy level side being positive and lower side being negative, owing to the light incident thereupon, so that the charges stored in said capacitive means are successively and periodically discharged under the action of scanning pulses to said read-out, whereby light signals are converted into periodic timed pulse signals.

4,341,955

IMAGE INTENSIFIER OF THE PROXIMITY-FOCUS TYPE

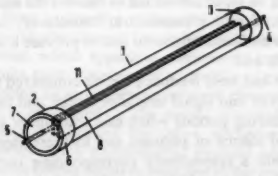
Hendrik Mulder, and Johannes J. Houtkamp, both of Delft, Netherlands, assignors to N.V. Optische Industrie "De Oude Delft", Netherlands

Filed Jan. 30, 1980, Ser. No. 116,973

Claims priority, application Netherlands, Feb. 2, 1979, 7900878

Int. Cl.³ H01J *31/50*

U.S. Cl. 250—213 VT **18 Claims**



1. An image intensifier of the proximity-focus type, comprising at least one photocathode surface and at least one anode screen surface located opposite to said photocathode surface, said photocathode surface and said anode screen surface being disposed in a hollow body having a longitudinal axis in which

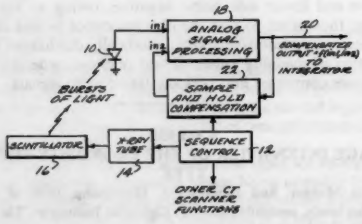
a vacuum prevails and wherein during use, there is provided an electrical field between said photocathode surface and said anode screen surface, characterized in that said photocathode surface and said anode screen surface extend substantially parallel to said longitudinal axis of said hollow body and are spaced apart a distance insufficient to require focussing electrodes.

4,341,956

APPARATUS AND METHOD FOR COMPENSATING THE DARK CURRENT PHOTOELECTRIC TRANSDUCERS

Ronald F. Bax, Columbia, Md., assignor to Pfizer, Inc., New York, N.Y.

Continuation of Ser. No. 78,396, Sep. 24, 1979, abandoned. This application Mar. 3, 1981, Ser. No. 240,242
Int. Cl.[3] G01J 3/50
U.S. Cl. 250—214 C 34 Claims



1. Apparatus for reducing errors in photon measurements made with a photoelectric transducer having a variable offset component in its output electrical signal and which transducer is sometimes exposed to a source of photons, said apparatus comprising:

a signal amplifier circuit including a non-linear amplifier and having an input connected to receive the electrical output signal of said photoelectric transducer, including said variable offset component and to provide a corresponding output, and

a sample-and-hold feedback circuit connected to receive the output of said signal amplifier circuit and to sample same only during periods when said transducer is not exposed to said source of photons and to thereafter provide and maintain a respectively corresponding output feedback signal during periods when the transducer is exposed to the source of photons,

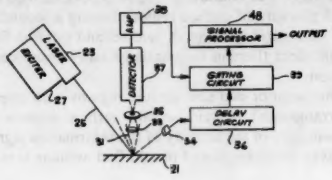
said sample-and-hold feedback circuit having its output signal connected to control said signal amplifier circuit such that its output is compensated for said variable offset component.

4,341,957

FLUORESCENT ANTIBODY COMPOSITION FOR IMMUNOFLUOROMETRIC ASSAY

Irwin Wieder, Los Altos, Calif., assignor to Analytical Radiation Corporation, Los Altos, Calif.

Filed Nov. 26, 1975, Ser. No. 635,411
Int. Cl.[3] G01N 21/64; G09K 3/00
U.S. Cl. 250—461.2 22 Claims



1. A fluorescent antibody comprising,

an antibody specific to an antigen to be detected, and

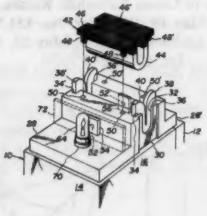
a fluorescent rare-earth chelate conjugated with said antibody, said rare-earth chelate consisting of a rare-earth ion coordinated by chelating ligands.

4,341,958

YARN-BREAK/YARN-STOP DETECTING DEVICE

Shiuji Ohsawa, No. 10-2, 2-chome, Tsutsumi-cho, Kiryu City, Gumma Prefecture, Japan

Filed Feb. 20, 1980, Ser. No. 123,059
Claims priority, application Japan, Aug. 21, 1979, 54-114031
Int. Cl.[3] G01N 21/86
U.S. Cl. 250—561 27 Claims



1. A yarn-break/yarn-stop detecting device having a lateral direction parallel with the direction in which a yarn is to travel through the detecting device and a front-and-rear direction perpendicular to said lateral direction, comprising in combination:

a casing structure;

a yarn passage assembly fast on said casing structure and formed with a gap longitudinally extending in a lateral direction of the detecting device, the yarn passage assembly including a transparent portion received in said gap;

a light emitter element fixedly positioned with respect to said yarn passage assembly and arranged to project a substantially constant beam of light through said transparent portion of the yarn passage assembly in a predetermined front-and-rear direction of the detecting device when the light emitter element is electrically energized,

a photoelectric transducer element fixedly positioned with respect to said yarn passage assembly and located substantially in alignment with said light emitter element across said transparent portion of the yarn passage assembly in said predetermined front-and-rear direction for being operative to produce an electric current when irradiated with the beam of light emitter element and incident on the transducer element through said transparent portion of the yarn passage assembly,

output delivery means operative to produce an output signal when actuated electrically, and

a control circuit electrically intervening between said photoelectric transducer element and said output delivery means for actuating the output delivery means when the current produced by the transducer element is in a predetermined condition,

wherein: said yarn passage assembly comprises first and second bracket members fixedly positioned with respect to said casing structure and spaced apart from each other in a front-and-rear direction of the detecting device for forming said gap therebetween and a dust-proof plug member having a portion constituting said transparent portion of the yarn passage assembly, said transparent portion being closely received in said gap and being detachably in contact with both of said bracket members,

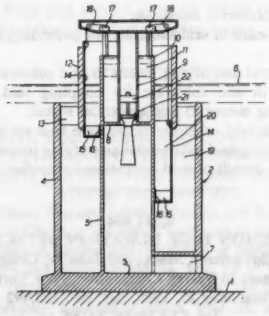
said transparent portion of said plug member having a generally U-shaped cross section and has front and rear walls which are spaced apart from each other in a front-and-rear direction of the detecting device and which are closely and detachably in contact with said bracket members, respectively.

4,341,959

WAVE ENERGY POWER STATION

Nils Ambli, Oslo, Norway, assignor to Kvaerner Brug A/S, Oslo, Norway

Filed Apr. 8, 1980, Ser. No. 138,401
Claims priority, application Norway, Apr. 19, 1979, 791300
Int. Cl.³ F03B *13/12*
U.S. Cl. 290—53 **16 Claims**



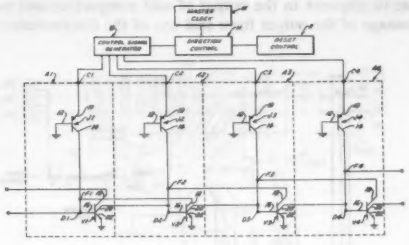
1. In a wave energy power station comprising two water-filled chambers in communication with each other at the bottom, a first one of said chambers being in communication with the sea at the upper end thereof and the second chamber being defined by at least one wall which projects above the surface of the sea, the water in said first and second chambers comprising a continuous body of water, the water in said second chamber having an exposed upper surface out of communication with the sea, said upper surface rising above the level of the surface of the sea with an oscillating movement in opposite directions under the influence of wave action, and means to utilize the potential energy of the water in the second chamber which is higher than the surface of the sea; the improvement comprising means to tune the resonant frequency of said body of water in said chambers to that of the waves, said tuning means comprising means for selectively changing at least one of the length of said body of water and the area of said exposed upper surface.

4,341,960

I^2L STATIC SHIFT REGISTER

Kenneth L. Naiff, Hauppage, N.Y., assignor to General Instrument Corporation, Hicksville, N.Y.

Filed Feb. 21, 1980, Ser. No. 123,434
Int. Cl.³ G11C *19/28*
U.S. Cl. 307—221 R **1 Claim**



1. An I^2L shift register comprising a bit, said bit comprising a given number of units operably interconnected in sequence, each unit comprising a control input, a data input, a data output, a feedback output, an injector transistor having a collector, a base and an emitter and an inverter transistor having a base, first and second collectors and an emitter, said emitter of said injector transistor being operably connected to said control input, said base of said injector being operably connected to ground, said collector of said injector transistor being operably connected to said base of said inverter transistor, said base of said inverter transistor being operably connected to the data output from the previous unit and the feedback output from the subsequent unit, said first and second collectors of said inverter transistor being operably connected to said data output and feedback output, respectively, and means for generating a series of control signals, one for each unit in the bit, said generating means having separate outputs, each of which is operably connected to said control input of a different one of said units in the bit, said register further comprising control reset means operably connected to said control signal generating means for causing said control signal generating means to temporarily cease generating control signals for a time longer than the decay time of the charge on said bases of said inverter transistors thereby automatically resetting said shift register.

4,341,961

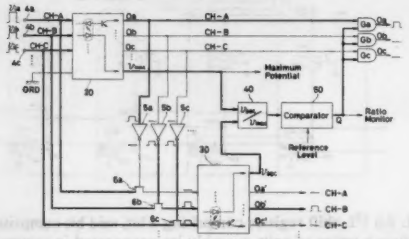
DISCRIMINATION APPARATUS FOR EXTRACTING MAXIMUM-VALUE OUTPUT FROM A PLURALITY OF SIGNALS AND INDEXING THE RELEVANT CHANNEL

Kiyoshi Komoriya, 3-2 Kami-Kitazawa 3 chome, Setagaya-ku, Tokyo, Japan

Filed Feb. 29, 1980, Ser. No. 125,993
Claims priority, application Japan, Mar. 3, 1979, 54/24819
Int. Cl.³ H03K *5/24*
U.S. Cl. 307—355 **1 Claim**

1. An apparatus for the extraction of the signal of the maximum potential from a plurality of input signals and for the indexing of the particular channel transmitting the signal of the maximum potential, which apparatus comprises a pair of discrimination circuits each composed of a plurality of photocouplers each consisting of an electroluminescent element whose output terminal is connected to the output terminals of the electroluminescent elements of the other photocouplers to form an OR circuit and a photoelectric element adapted to operate to derive an output signal in response to the emission of light from said electroluminescent element, and transistors possessing respective independent output terminals and adapted to generate a switching action in response to the bias applied to the base in consequence of the operation of said photoelectric elements thereby deriving a signal as an output of the discrimination circuits; inverters connected to the output

signal of one of the discrimination circuit circuits, analog switches adapted to operate in response to the output signals of said inverters and connected to respective output terminals of the other discrimination circuit; an arithmetic circuit adapted to obtain the ratio between the output signals issued from the two discrimination circuits, comparator adapted to compare the ratio of the two potential signals from the arithmetic circuit with a preset reference level signal; and gates adapted to operate in response to the output of said comparator and permit passage of the output from said one of the discrimination cir-



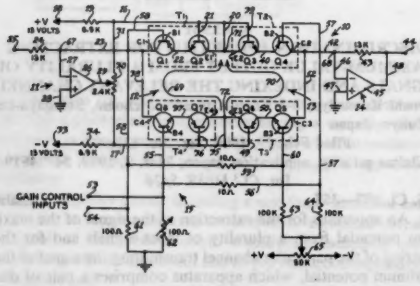
cuits, whereby the potential of the input signal of the maximum potential is extracted through said one of the discrimination circuits and the input channel transmitting that particular signal is indexed, the potential of the input signal of the second largest potential is extracted through the other discrimination circuit and, at the same time, the channel transmitting that particular signal is indexed, and the gate corresponding to the input channel transmitting the signal of the maximum potential issues the channel discrimination signal when the ratio of the two potentials from the two discrimination circuits is found as allowable with respect to the preset reference level signal.

4,341,962

ELECTRONIC GAIN CONTROL DEVICE

Paul C. Buff, Nashville, Tenn., assignor to Valley People, Inc., Nashville, Tenn.

Filed Jun. 3, 1980, Ser. No. 156,059
Int. Cl.³ G06G *7/12, 7/24*
U.S. Cl. 307—492 **24 Claims**



1. An electronic gain control device, comprising:

(a) a first bipolar circuit having an input for receiving an input signal and an output, said first bipolar circuit comprising first elements for producing log transfer functions and adapted to produce a log signal all said output logarithmically related to said input signal,

(b) means for summing a gain control signal with said log signal at said output,

(c) a second bipolar circuit connected to the output of said first bipolar circuit and comprising second elements for producing anti-log transfer functions and adapted to produce an output signal anti-logarithmically related to the sum of said log signal and said gain control signal, and

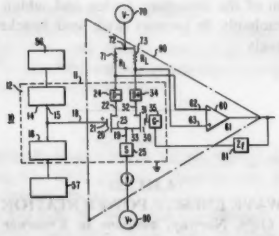
(d) bias means for applying a bias current of said first and second elements of such value that said elements are continuously in electrical conduction through both polarities of an AC input signal applied to said input, to cause said first and second bipolar circuits to operate in a class A domain.

4,341,963

INTEGRATED CIRCUIT FOR CHIP OP/AMP INTERFACE

Arthur S. Jensen, and Keefer S. Stull, Jr., both of Baltimore, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 27, 1980, Ser. No. 163,549
Int. Cl.³ G06G *7/12*
U.S. Cl. 307—497 **3 Claims**



1. An integrated circuit for coupling an electrical signal in said integrated circuit to an operational amplifier external to said integrated circuit, said operational amplifier including differential inputs and a feedback circuit, said integrated circuit comprising:

(a) a semiconductor substrate;

(b) signal means in said substrate for providing an electrical signal;

(c) differential amplifying means in said substrate;

(d) means in said substrate for coupling said differential amplifying means to said electrical signal;

(e) means in said substrate responsive to a set of potentials for including said differential amplifying means within the feedback circuit of said operational amplifier.

4,341,964

PRECISION TIME DURATION DETECTOR

Chad S. Chi, Shrewsbury, Mass., and John W. Craig, Scottsdale, Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed May 27, 1980, Ser. No. 153,492
Int. Cl.³ H03K *5/153*
U.S. Cl. 307—517 **6 Claims**

1. Apparatus for detecting whether the time duration between two events of an analog waveform is greater or less than a predetermined time interval, comprising

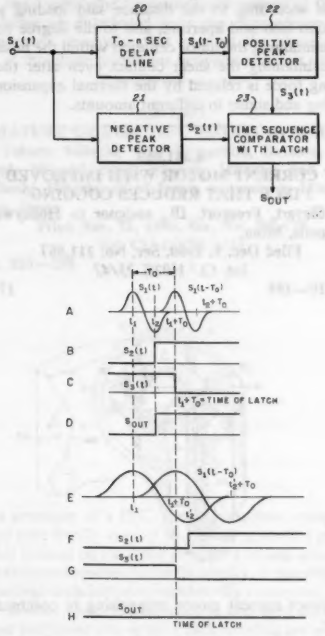
delay means for providing a delayed version of said waveform delayed by said predetermined time interval, thereby providing a delayed waveform,

first detector means responsive to said delayed waveform for detecting the first occurring of said two events of said delayed waveform and providing a signal at the time of occurrence thereof,

second detector means responsive to said waveform for detecting the second occurring of said two events of said waveform and providing a signal at the time of occurrence thereof, and

time sequence comparator means coupled to receive said signals from said first and second detector means for providing a first indication when said signal from said first

detector means occurs prior to said signal from said second detector means and a second indication when said



signal from said second detector means occurs prior to said signal from said first detector means.

4,341,965

COMPOSITE ELECTRODE AND INSULATING WALL ELEMENTS FOR MAGNETOHYDRODYNAMIC POWER GENERATING CHANNELS CHARACTERIZED BY FIBERS IN A MATRIX

Takayasu Okuo, Ibaragi; Takaki Masaki, and Keisuke Kobayashi, both of Ohtsu, all of Japan, assignors to Agency of Industrial Science & Technology; Ministry of International Trade & Industry and Toray Industries, Inc., all of Tokyo, Japan

Filed Mar. 27, 1981, Ser. No. 248,210
Claims priority, application Japan, Mar. 31, 1980, 55-40462
Int. Cl.³ H02N *4/02*
U.S. Cl. 310—11 **113 Claims**

1. A composite electrode element for a magnetohydrodynamic power generating channel, comprising a matrix composed of at least one member selected from the group consisting of oxide, carbide, nitride and boride and a fibrous material composed of at least one member selected from the group consisting of carbon, graphite, oxide, carbide, nitride and boride, said fibrous material being embedded in said matrix and unified with said matrix so as to form a composite.

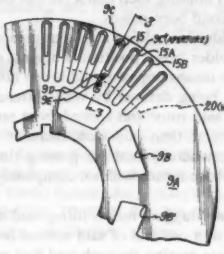
64. A composite wall element for a magnetohydrodynamic power generating channel, comprising a matrix composed of at least one member selected from the group consisting of oxide, nitride and boride and a fibrous material composed of at least one member selected from the group consisting of carbon, graphite, oxide, carbide, nitride and boride, said fibrous material being embeded in said matrix and unified with said matrix so as to form a composite.

4,341,966

LAMINATED DYNAMOELECTRIC MACHINE ROTOR HAVING CAST CONDUCTORS AND RADIAL COOLANT DUCTS AND METHOD OF MAKING SAME

William W. Pangburn, Schenectady, N.Y., assignor to General Electric Co., Schenectady, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,576
Int. Cl.³ H02K *9/19*
U.S. Cl. 310—61 **13 Claims**



1. In a laminated rotor having cast conductors in spaced axially-extending passageways adjacent the peripheral surface of the stacked rotor laminations and having radial coolant ducts extending between spaced groups of the rotor laminations, the improvement comprising;

(a) a plurality of laminated spacer assemblies, each comprising a plurality of metal plates, locking means for securing such plates to each other in stacked relationship, and wall means defining an aperture through each plate, the apertures in all of said plates of each spacer assembly being positioned in alignment to define a conductor passageway through the assembly, and

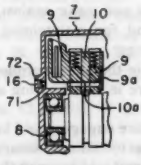
(b) mounting means fastening each of said spacer assemblies, respectively, to at least one rotor lamination of a respective juxtaposed group of rotor laminations with each spacer assembly conductor aperture aligned with a respective axially-extending passageway through the rotor laminations, thereby to define continuous axially-extending conductor passageways through the aligned rotor laminations and spacer assemblies, said continuous conductor passageways each being sealed from the radial coolant ducts by said wall means of the respective spacer assemblies.

4,341,967

CHARGING GENERATOR FOR VEHICLE

Yoshiyuki Iwaki, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 12, 1981, Ser. No. 243,144
Claims priority, application Japan, Mar. 21, 1980, 55/37955[U]
Int. Cl.³ H02K *5/10*
U.S. Cl. 310—88 **1 Claim**



1. A charging generator for a vehicle, comprising:
a stator;

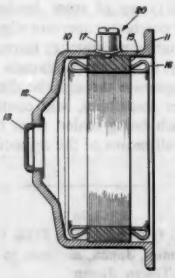
a rotor facing said stator and separated therefrom by a gap;
at least one slip ring mounted on said rotor;
brush means for contacting each said slip ring;
a brush holder supporting each said brush means;
first bore means extending through said brush means, said first bore means extending coaxially and being parallel to the axis of said rotor;
a housing surrounding said rotor;
second bore means coaxial with said first bore means and having a first diameter, said second bore means extending through said housing such that a pin can pass through said first and second bore means;
a lubricant holder for holding a viscous grease lubricant, said lubricant holder being positioned against one end of said second bore means opposite said brush holder, said lubricant holder being defined by walls extending parallel to said axis of said rotor and spaced from one another by a distance greater than said first diameter of said second bore means, whereby said pin passing through said first and second bore means will not completely fill said reservoir; and
a viscous grease plugging means filling said lubricant holder and sealing said one end of said second bore means,
whereby said pin passing through said first and second bore means will pierce and displace said grease plugging means and said walls will retain said grease plugging means in said reservoir.

4,341,968

SUPPORT MEANS FOR HIGH-TEMPERATURE GENERATOR STATORS

Raymond W. Borden, Farmingdale, and James E. DeBard, Eatontown, both of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Jul. 30, 1980, Ser. No. 173,780
Int. Cl.³ H02K *5/00*
U.S. Cl. 310—91 **7 Claims**



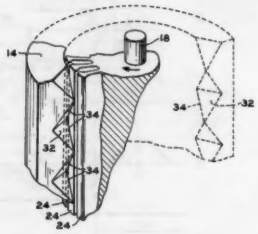
1. In a rotating electrical machine having a stator of generally cylindrical form and a housing surrounding said stator in close fitting relationship at lower temperatures, said housing and said stator being subject to thermal expansion in different amounts resulting in loss of close fit at higher temperature;
means for securing said stator against relative movement in said housing and for maintaining said stator centered therein, comprising
a keyway formed in the outer periphery of said stator;
a threaded aperture in said housing aligned with said keyway;
a key in said aperture engaging said keyway, said key being so dimensioned as to maintain shear contact with the walls of said aperture and said keyway throughout the range of thermal expansion to which said housing and said stator are subject;
spring means in said aperture and bearing on said key to exert a radially directed thrust on said key and said stator when loading forces are applied to said key; and
a loading screw threaded into said aperture and bearing on said spring means to exert a loading force on said spring means according to the distance said loading screw is threaded into said aperture, and to the degree necessary for maintaining the stator centered within the housing and for maintaining the shear contact even after the spring loading force is relaxed by the thermal expansion of the housing and stator in different amounts.

4,341,969

DIRECT CURRENT MOTOR WITH IMPROVED POLE PIECE THAT REDUCES COGGING

Dale W. Sievert, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 1, 1980, Ser. No. 211,887
Int. Cl.³ H02K *23/42*
U.S. Cl. 310—154 **17 Claims**



12. A direct current motor comprising in combination: a pole piece;
an armature having a series of armature bars disposed around its periphery;
means supporting said armature and said pole piece; and
a series of notches formed in said pole piece along at least one edge thereof.

4,341,970

THREE PHASE WINDING FOR HIGH VOLTAGE MACHINES WITH Y-CONNECTED PHASES

Herbert Auinger, Nürnberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 27, 1979, Ser. No. 69,990
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841415
Int. Cl.³ H02K *3/00*
U.S. Cl. 310—184 **13 Claims**

1. In a three phase winding for a high voltage machine with Y-connected phases whose coil groups, disposed along the circumference cyclically distributed, in slots, each consist of several series connected coils, the magnetic flux of which points alternately in opposite directions, forming at least two poles, the improvement comprising, the coils being disposed so that the magnetic flux direction in the one half of the coil

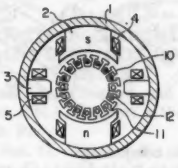
groups is the same as the direction of increase in potential, these forming "with" coil groups, and the magnetic flux direction in the other half of the coil groups is opposed to the direction of increase in potential, these forming "counter" coil groups, the "with" and "counter" coil groups of the various phases being so distributed over the circumference and so interconnected phasewise that at most the phase voltage is present at the phase transitions between adjacent coil sides.

4,341,971

ARMATURE OF ELECTRIC ROTATING MACHINE

Kazuo Tahara, Hitachi; Seizi Yamashita, Katsuta; Takayuki Matsui, Hitachi; Shoji Motegi, Hitachi, and Noriyoshi Takahashi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 18, 1980, Ser. No. 208,075
Int. Cl.³ H02K 3/48
U.S. Cl. 310—195 3 Claims



1. An armature of a D.C. rotating machine comprising an armature core fixedly carried on a rotating shaft, a plurality of axial slots formed on the outer periphery of said armature core at predetermined spaces circumferentially, a plurality of armature windings each including electrically connected upper and lower coil sides which are mounted in said axial slots such that the upper and lower coil sides of each winding are spaced with a predetermined circumferential distance, while each axial slot contains a predetermined number of such upper and lower coil sides of different windings, and a commutator electrically connected to said armature winding and supported on said rotating shaft; the improvement comprising:

at least one circumferential slot formed in a predetermined axial position of said armature core so as to cross said axial slots and communicate the adjacent slots;

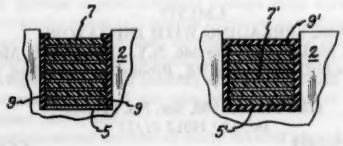
a part of the upper and lower coil sides of the different windings contained in predetermined axial slots being shifted from said predetermined axial slots to adjacent axial slots through said circumferential slot, while the predetermined circumferential distance between the upper and lower coil sides of each winding is maintained.

4,341,972

DYNAMOELECTRIC MACHINE COMMUTATOR STRUCTURE AND METHOD OF MAKING SAME

William B. Penn, and Martin A. Zgraggen, both of Erie, Pa., assignors to General Electric Co., Schenectady, N.Y.

Filed Mar. 17, 1981, Ser. No. 244,586
Int. Cl.³ H02K 23/38; B65H 81/00
U.S. Cl. 310—233 7 Claims



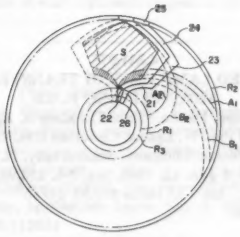
1. A dynamoelectric machine commutator structure comprising a plurality of commutator conductive segments mounted in a cylindric array on a supporting hub member, said commutator segments being electrically insulated from one another and from said hub member, at least one annular groove defined in the outer surface of said array of commutator segments for receiving a commutator banding therein, a commutator banding mounted in said groove to apply a radially inward force to the commutator segments, and the improvement comprising a coating of flexible, thermally stable and electrical track resistant material mounted on and adhered to a predetermined upper portion of the side walls of said groove and at least the edge part of the radially outer surface of said banding to completely seal the junction between the radially outer edge surface of the banding and the commutator segments thereby to prevent electrically conductive contaminants from collecting in that junction and causing electrical tracking between the commutator segments.

4,341,973

ARMATURE IN ELECTRICAL ROTARY MACHINE

Yutaka Maruko, Iruma; Susumu Sako, Kawagoe, and Tamotu Kobayashi, Hidaka, all of Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Kitakyushu, Japan

Filed Jul. 17, 1980, Ser. No. 169,586
Claims priority, application Japan, Jul. 27, 1979, 54-104561[U]
Int. Cl.³ H02K 1/22
U.S. Cl. 310—268 3 Claims



1. An armature in an electrical rotary machine, which comprises a plurality of half coils printed on both surfaces of an insulating disc, each half coil being constituted by a radially extended linear conductor and an inner sloped conductor and an outer sloped conductor which are extended from both ends of said linear conductor towards the inner circumference and outer circumference of said disc, respectively, said half coils on both surfaces of said disc being connected to one another at the inner and outer ends thereof by radially extending connecting portions; wherein

each of said inner sloped conductors is extended along an involute line with a first circle as a base circle, which is smaller than a second circle formed by the inner ends of the half coils.

4,341,974

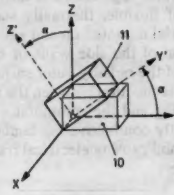
PIEZOELECTRIC CRYSTAL ELEMENT FOR USE IN FORCE, PRESSURE AND ACCELERATION TRANSDUCERS

Reto Calderara, Bern, Switzerland, assignor to Kistler Instrumente AG, Winterthur, Switzerland

Filed May 28, 1980, Ser. No. 154,022
Claims priority, application Switzerland, Sep. 14, 1979, 8315/79
Int. Cl.³ H01L 41/08
U.S. Cl. 310—360 6 Claims

1. A piezoelectric crystal element for use in force and pressure transducers and accelerometers, consisting of a monocrystalline cubic-polar material, comprising electrode faces that intersect one of the crystallographic principal axes X,Y, Z at an angle $\alpha' = \text{arc sin } \sqrt{p}$ and the other principal axes at $\beta' = \pm\frac{1}{2}$

arc cos p, wherein p is substantially 0 for the piezoelectric orthoaxial shear effect, substantially ⅓ for the longitudinal and substantially 1 for the transverse piezoeffect, and substantially plane-parallel force introduction surfaces which essentially



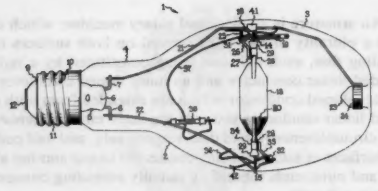
coincide with the electrode faces for shear and longitudinal effects, and which essentially correspond to diagonal planes perpendicular to the electrode faces for the transverse piezoeffect.

4,341,975

JACKETED LAMP HAVING TRANSVERSELY MOUNTED ARC TUBE

Robert G. Phillipp, Parma, Ohio; Theodore S. Apple, Philadelphia, Pa., and Paul W. Ernest, Cleveland Hts., Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 12, 1980, Ser. No. 158,932
Int. Cl.³ H01J *61/30, 61/36*
U.S. Cl. 313—25 **9 Claims**



1. An electric lamp comprising:

a glass jacket having a bulb portion with a reduced diameter neck portion closed by a stem having a pair of lead-in wires sealed therethrough,

a base fastened to the end of said neck and having contact members,

an elongated arc tube within the bulb portion of greater overall length than the internal diameter of the neck portion, said arc tube having electrodes attached to inleads sealed into opposite ends of the tube,

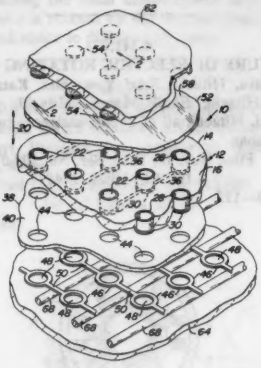
and a mount structure comprising a pair of divergent support rods extending from said lead-in wires into the bulb portion, hinged attachments of the ends of the arc tube to said rods, said attachments allowing folding of the mount assembly in line with one rod leading and the other trailing for passage through the neck when only said one rod is fastened to its lead-in wire but assuring transverse erection of the arc tube within the bulb after said other rod is fastened to its lead-in wire, and flexible wire interconnections between the arc tube in-leads and said support rods.

4,341,976

DISPLAY SYSTEM

Jacques M. Hanlet, Loxahatchee, Fla., assignor to Alpha-Omega Development, Inc., Loxahatchee, Fla.

Filed Mar. 5, 1980, Ser. No. 121,918
Int. Cl.³ H01J *1/20, 61/09, 61/42*
U.S. Cl. 313—210 **58 Claims**



1. A display system comprising:

(a) cathode means for producing energy in the ultraviolet bandwidth of the electromagnetic spectrum from ionization of metal atoms, said cathode means defining a plate member having opposing first and second surfaces, said plate member having a plurality of openings formed therethrough, each of said openings defining a sidewall having a metallic coating formed thereon;

(b) a dielectric film member having first and second opposing surfaces, said dielectric film member first surface being bonded to said second surface of said plate member, said dielectric film member having a plurality of openings formed therethrough, each of said film member openings having an axis line substantially aligned with an axis line of each of said plate member openings;

(c) anode means bonded to said second surface of said dielectric film member, said anode means having an opening formed therethrough, said anode means opening defining an axis line substantially coincident with said plate member openings;

(d) a display panel member secured to said plate member first surface, said display panel being substantially transparent to a bandwidth of the electromagnetic spectrum substantially comprising the ultraviolet spectrum, said display panel having formed thereon a plurality of fluorescent material coatings for intercepting said ultraviolet energy from said ionization of said metal atoms, said coatings being in registration with said plate member openings;

and,

(e) a back panel member displaced from said dielectric film member and coupled thereto to form a hermetic seal.

4,341,977

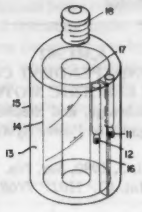
ARC SPREADING WITH INITIATORS

Leo Gross, 3611 217 St., Bayside, N.Y. 11361, and S. Merrill Skeist, 1620 Cedar Swamp Rd., Brookville, Glen Head, N.Y. 11545

Filed Feb. 4, 1980, Ser. No. 117,949
Int. Cl.³ H01J *61/12*
U.S. Cl. 313—485 **6 Claims**

1. An arc discharge device such as a fluorescent lamp comprising an envelope having an inner phosphor coating, arc discharge means in said envelope, a rare gas in said envelope and an arc spreading initiator gas in said envelope for spread-

ing the arc, said rare gas being argon at a pressure of from 1–3 torr together with sufficient mercury to establish a vapor



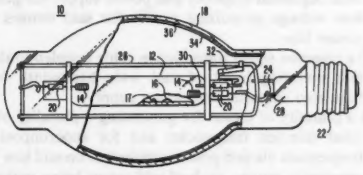
pressure of about 10 microtorr, said arc spreading initiator gas being a combination of nitrogen at a range of 0.1 to 0.2 microtorr and dichloro-difluoro ethane at about 0.25 microtorr.

4,341,978

HIGH-INTENSITY-DISCHARGE LAMP WITH IMPROVED COLOR RENDITION OF ILLUMINATED OBJECTS

William A. Thornton, Jr., Cranford, and Daniel A. Larson, Cedar Grove, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 12, 1980, Ser. No. 158,858
Int. Cl.³ H01J *61/20, 61/44*
U.S. Cl. 313—487 **3 Claims**



1. A high-intensity-discharge lamp intended for operation at a predetermined wattage input and comprising:

a sealed elongated radiation-transmitting arc tube having electrodes operatively disposed therein proximate the ends thereof, a sealed light-transmitting protective envelope in which said arc tube is operatively mounted with the environment enclosed by said protective envelope being non-reactive for the lamp elements enclosed thereby, electrical lead-in means sealed through said arc tube and connecting to said electrodes, electrical adaptor means affixed to the outer surface of said protective envelope to facilitate electrical connection to a source of electrical power, and electrical conductor means electrically connecting said electrical adaptor means to said electrical lead-in means, said arc tube enclosing discharge-sustaining constituents plus a small charge of inert ionizable starting gas, the principal discharge-sustaining constituent in said arc tube being mercury present in predetermined amount to provide a predetermined voltage drop between said electrodes when said lamp is operating at said rated wattage input, and cadmium included within said arc tube as a supplemental discharge-sustaining constituent, and the weight ratio of said mercury constituent to said cadmium constituent in said arc tube being from about 50:1.5 to about 50:0.2; and

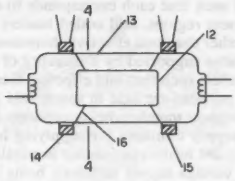
a predetermined amount of finely divided phosphor means carried as a coating on the inner surface of said protective envelope, said phosphor means principally comprising trivalent-europium-activated phosphor having a strong red emission located at about 620 nm.

4,341,979

FLUORESCENT LAMP WITH ROTATING MAGNETIC FIELD ARC SPREADING DEVICE

Leo Gross, 3611 217 St., Bayside, N.Y. 11361, and S. Merrill Skeist, 1620 Cedar Swamp Rd., Brookville, Glen Head, N.Y. 11545

Filed Feb. 14, 1980, Ser. No. 102,547
Int. Cl.³ H01J *7/44, 17/34, 19/78;* **H01K** *1/62*
U.S. Cl. 315—57 **3 Claims**



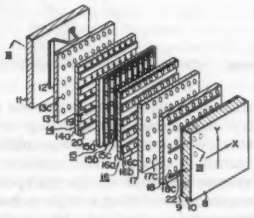
1. A fluorescent lamp comprising an envelope having a phosphored surface, and means at each end of the lamp to create a rotating magnetic field to force the arc of the lamp to flow close to phosored surface and increase the light output of the lamp, said means comprises filed coils for producing said rotating magnetic field, said coils being arranged in pairs and included opposed pairs of poles and means for 90 degree phase delaying one pair of said coils with respect to the other pair of said coils.

4,341,980

FLAT DISPLAY DEVICE

Mikio Noguchi, Chigasaki; Kazuho Kobayashi, Yokohama; Shigeo Takenaka, Fukaya, and Masaru Shimbo, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 4, 1980, Ser. No. 183,995
Claims priority, application Japan, Sep. 5, 1979, 54-112830; Sep. 5, 1979, 54-112831
Int. Cl.³ H01J *63/02*
U.S. Cl. 315—169.1 **5 Claims**



1. A flat display device comprising:

a vacuum envelope constituted by a back base plate and a flat display panel provided with an inner fluorescent material layer;

a flat thermionic cathode structure disposed at a position separated from the inner side of said back base plate and parallel to said display panel; and

a plurality of flat electrode structures stacked together with intervening insulators between said thermionic cathode structure and said fluorescent material layer, said flat electrode structures each having a plurality of thermionic electron beam passage holes;

said plurality of flat electrode structures being arranged to control and accelerate thermionic electron beams emitted from said thermionic cathode structure such that said thermionic electron beams strike respective picture element regions predetermined in a regular array on said

fluorescent material layer and thus cause fluorescence of said picture element regions;

said back base plate being constituted by an elastic metal plate;

said thermionic cathode structure comprising a plurality of sections, said sections each including a plurality of coiled heaters, said coiled heaters each having an effective thermionic electron emitting portion having a coating of a thermionic electron emitting material, said individual effective thermionic electron emitting portions being arranged such that each corresponds to each of said picture element regions, said coiled heaters having portions thereof other than said effective thermionic electron emitting portions supported by a plurality of conductive support members such that said effective thermionic electron emitting portions are held in space, said plurality of conductive support members being connected to a plurality of voltage supply terminals for supplying heating power to all said coiled heaters connected in parallel, and said plurality of voltage supply terminals being led out through said back base plate via insulating members; and

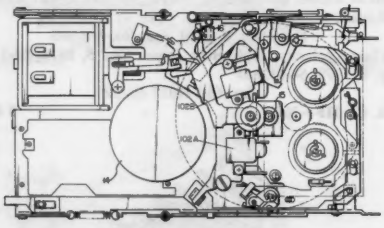
said thermionic electron beam passage holes formed in each said flat electrode structures being arranged such that each corresponds to each of said effective thermionic electron emitting portions.

4,341,981

ROTARY DIRECTION REVERSING APPARATUS FOR A MOTOR OF A MICROCASSETTE TAPE TRANSPORT

Akira Osanai, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,465
Claims priority, application Japan, Apr. 20, 1979, 54/48692
Int. Cl.³ H02P 5/16
U.S. Cl. 318—6 **6 Claims**



1. A rotary direction reversing apparatus for a motor of a microcassette type tape recorder, comprising:

a microcassette tape transport having a rotatable capstan for driving a recording tape in a microcassette in both forward and reverse directions of tape transporting;

reversible motor means including a single motor provided in said tape transport for selectively driving said capstan in opposite rotational directions to selectively transport said tape in respective reverse directions, said motor means having substantially the same characteristic for both the forward and reverse directions of rotation thereof;

said tape transport being arranged such that the mechanical load applied to said motor means via said recording tape is substantially the same for both the forward and reverse directions of recording tape transporting;

motor control means for generating a motor drive current and for setting a motor speed of said motor means to a given value, said motor control means and said motor means forming a single servo loop which is operable for both forward and reverse directions of tape transporting; and

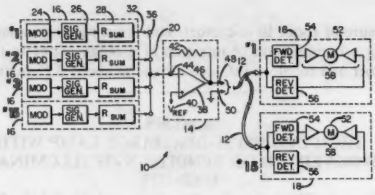
switching means connected between said motor means and said motor control means for reversing the direction of said motor drive current generated by said motor control means and which is supplied to said motor means so that a transfer function of said single servo loop including said motor means and said motor control means is substantially fixed to be substantially the same in both directions of rotation of said motor.

4,341,982

SIMULTANEOUS INDEPENDENT CONTROL SYSTEM FOR ELECTRIC MOTORS

Abbott W. Lahti, Cambridge, and Stephen R. Russell, Acton, both of Mass., assignors to Power Systems, Inc., Cambridge, Mass.

Filed Jul. 3, 1980, Ser. No. 165,413
Int. Cl.³ H02P 7/68
U.S. Cl. 318—51 **15 Claims**



1. A system for simultaneously and independently controlling a plurality of motors comprising:

(a) A common power line;

(b) a plurality of motors connected to said power line;

(c) a power supply unit comprising a wide bandwidth feedback regulated amplifier and power supply for generating low voltage propulsion power for said motors to said power line;

(d) a common signal transmission cable coupled to the negative inverting input of said wide bandwidth feedback regulated amplifier and power supply;

(e) a plurality of means for generating a plurality of modulated selected frequencies and for superimposing said frequencies via said power supply unit on said low voltage propulsion power, each of said means being portable and being removably parallel coupled to said common signal transmission cable;

(f) a plurality of replaceable and interchangeable frequency selectors, one each for each one of said plurality of means for generating said plurality of modulated selected frequencies, for determining each of said selected frequencies; and

(g) a plurality of receivers coupled to said common power line, each of said receivers tuned to one of said modulated selected frequencies and associated with and controlling one of said motors.

4,341,983

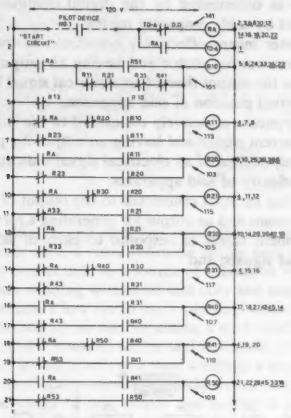
AUTOMATIC SEQUENCE CONTROL SYSTEM

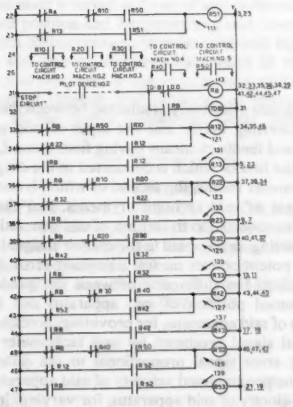
Mayo Gottliebson, 419 E. Main St., Lancaster, Ohio 43130

Continuation-in-part of Ser. No. 941,324, Sep. 11, 1978, abandoned. This application Jul. 11, 1980, Ser. No. 168,180
Int. Cl.³ H02P 1/58; F04B 41/06
U.S. Cl. 318—102 **7 Claims**

1. A system for controlling a plurality of motors comprising starting circuitry for sequentially starting said motors in accord with a predetermined cyclic motor order, and stopping circuitry for sequentially stopping said motors in accord with said cyclic motor order; said starting circuitry comprising a master starting control circuit for respectively developing first and second states in response to the sensed presence and absence of a predetermined first condition, a plurality of motor control starting circuits which are coupled to and operate under the control of said master starting control circuit for starting the respective motors, and a plurality of starting circuit condition-

ing circuits which are coupled to and for conditioning the respective motor control starting circuits to respond sequentially to successive developments of said first state, said starting circuit conditioning circuits being coupled to said master starting control circuit and operating under the control thereof to respond to second state developments by said master starting control circuit; and said stopping circuitry comprising a master stopping control circuit for respectively developing third and fourth states in response to the sensed presence and absence of a predetermined second condition, a plurality of motor control





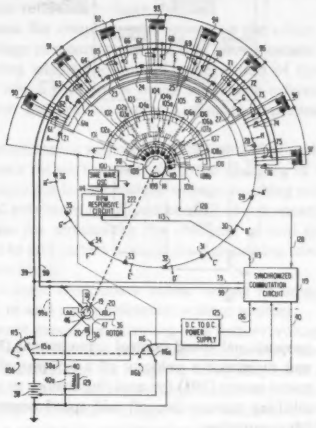
stopping circuits which are coupled to and operate under the control of said master stopping control circuit for stopping the respective motors, and a plurality of stopping circuit conditioning circuits which are coupled to and for conditioning the respective motor control stopping circuits to respond sequentially to successive developments of said third state, said stopping circuit conditioning circuits being coupled to said master stopping control circuit and operating under the control thereof to respond to fourth state developments by said master stopping control circuit.

4,341,984

ELECTRONIC COMMUTATION FOR DIRECT CURRENT ELECTRIC MOTORS

Louis W. Parker, 2040 N. Dixie Hwy., Ft. Lauderdale, and Rhey W. Hedges, Ft. Lauderdale, Fla., assignors to Louis W. Parker, Ft. Lauderdale, Fla.

Filed May 15, 1980, Ser. No. 149,816
Int. Cl.³ H02K *29/00*
U.S. Cl. 318—138 **35 Claims**



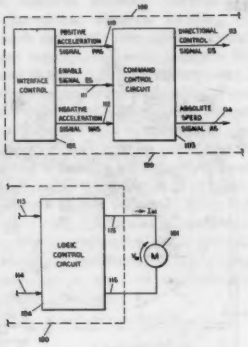
1. In a motor of the type comprising a stator consisting of a plurality of coils connected in series with one another in a closed loop configuration, means connecting the junction between adjacent pairs of said coils to diametrically opposed ones of said junctions in said closed loop coil configuration, a plurality of pairs of oppositely poled gate controlled solid state rectifiers connected respectively to the junctions of different adjacent pairs of said coils for selectively conducting current into and out of said stator coil junctions, a current source for energizing each of said pairs of rectifiers, a rotor mounted for rotation adjacent said stator, and means including a distributor driven by said rotor for energizing the gate electrodes of different ones of said rectifiers in sequence thereby to produce a plurality of stator poles which are angularly displaced from the rotor poles and which stator poles shift in position about said closed loop coil configuration with rotation of said rotor, the improvement comprising rpm responsive electronic switch means responsive to particular rotor speeds, control means responsive to the operating state of said electronic switch means for controlling the conduction of said rectifiers to effect a starting mode of operation when said rotor is rotating below a predetermined speed and to effect a running mode of operation different from said starting mode when said rotor is rotating above a different predetermined speed, said means for energizing the gate electrodes of said rectifiers in sequence comprising a plurality of induction coils spaced from one another along an arcuate path, means connected to said coils to provide a plurality of frequency selective attenuator circuits, said distributor comprising a magnetic element mounted for rotation with said rotor for movement along an arcuate path past said coils to vary the inductances of said coils in sequence thereby to vary the resonant frequencies and thereby the attenuation of said frequency selective circuits in sequence, and oscillator means coupled to said plurality of frequency selective attenuator circuits, said oscillator means being operable to produce at least two different frequencies and having means responsive to said electronic switch means for supplying a signal at one of said output frequencies to said frequency selective circuits in said starting mode and for supplying a signal at another of said output frequencies to said circuits in said running mode.

4,341,985

PROPORTIONAL SPEED CONTROL ARRANGEMENT

Robert W. Houskamp, Grand Rapids, Mich., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jan. 18, 1980, Ser. No. 113,357
Int. Cl.[3] H02P 3/06
U.S. Cl. 318—260 26 Claims



1. A proportional speed control arrangement (100) for adjusting and maintaining velocity of a self-propelled vehicle having motor means (101) for applying energy to said vehicle and establishing motion thereof, said speed control arrangement (100) comprising:

interface means (102) selectively activable for establishing velocity command signals indicative of desired directional motion of said vehicle;

circuit means (103, 104) connected to said interface means (102) and to said motor means (101) and responsive to activation of said interface means (102) and to said velocity command signals for applying to said motor means (101) energizing signals for adjusting the velocity of said vehicle from a first velocity to a second velocity; characterized in that

said interface means (102) comprises acceleration switch means (KI) and enable switch means (KE) wherein said velocity of said vehicle is adjusted from said first velocity to said second velocity by activation of both said acceleration switch means (KI) and said enable switch means (KE); and

said velocity of said vehicle is substantially maintained at said second velocity by deactivation of said acceleration switch means (KI) at a time corresponding to the time of said vehicle substantially attaining said second velocity.

4,341,986

SERVO CONTROL SYSTEM FOR THE POSITIONING OF AN APPARATUS

George B. Browder, Winter Garden, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 22, 1981, Ser. No. 227,311
Int. Cl.[3] G05B 5/01
U.S. Cl. 318—618 10 Claims

1. A servo control system for the positioning of an apparatus comprising, in combination:

a direct current motor having an input and a shaft, the shaft of said direct current motor having said apparatus connected thereto;

computing means having an output for generating a plurality of digital command signals, each of which is determinative of a predetermined programmed position in an azimuthal direction to which said apparatus will be moved by said motor at a programmed velocity within a predetermined time period;

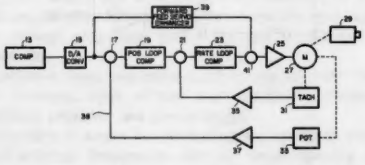
means having an input connected to the output of said computing means, and an output for converting each of said digital command signals to an analog command signal proportional thereto;

means having an input effectively connected to the output of said converting means, and an output connected to the input of said direct current motor for amplifying each of said analog command signals so as to effect the activation of said direct current motor such that the shaft thereof will rotationally move said apparatus to each programmed position as determined by the digital command signals generated by said computing means;

potentiometer means effectively connected to the shaft of said direct current motor and having an output for producing at the output thereof an electrical signal indicative of the actual position of said apparatus;

tachometer means effectively connected to the shaft of said direct current motor and having an output for producing at the output thereof an electrical signal indicative of the actual velocity of said apparatus;

means having an input connected to the output of said converting means and an output for generating a forward feed enhancement signal in response to each of said analog command signals; and

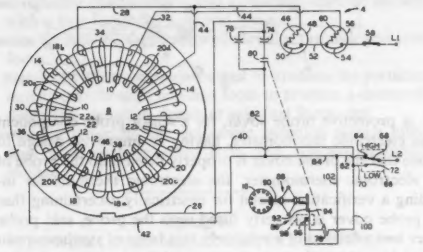


feedback means effectively connected between the output of said converting means and the input of said amplifying means, said feedback means having first, second, and third inputs, the first of which is connected to the output of said potentiometer means, the second of which is connected to the output of said tachometer means, and the third of which is connected to the output of said generating means; for providing, in response to the electrical signal produced by said potentiometer means, a position error signal proportional to the difference between the predetermined programmed position of said apparatus and the actual position of said apparatus, for providing, in response to the electrical signal produced by said tachometer means, a velocity error signal proportional to the difference between the programmed velocity of said apparatus and the actual velocity of said apparatus, for varying, in response to said position error signal and said velocity error signal the voltage level of each of said analog command signals so as to cause the rotational velocity of the shaft of said direct current motor to vary such that said apparatus will attain each predetermined program position within said predetermined time periods, and for combining said forward feed enhancement signal with each of said analog command signals so as to reduce said velocity error signal to a predetermined voltage level such that said servo control system will respond to digital command signals provided by said computing means at frequencies not to exceed a predetermined frequency rate.

4,341,987
TWO-SPEED SINGLE PHASE MOTOR WITH CENTRIFUGAL SWITCH

Lynn E. Fisher, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Sep. 16, 1980, Ser. No. 187,758
Int. Cl.³ H02D 5/40
U.S. Cl. 318—774 13 Claims

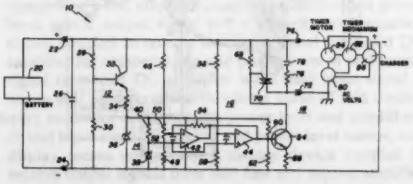


1. A multiple speed capacitor-start induction motor comprising: a stator core, a rotor rotatable within said core, a pair of terminals connectible to a source of excitation voltage, a high speed main winding wound on said core and connected across said terminals, a low speed main winding wound on said core and connected across said terminals, a start winding wound on said core and connected across said terminals, a start capacitor connected in series with said start winding, a single pole single throw centrifugally actuated switch means responsive to the rotational speed of said motor and having a pair of switch contacts which open when said rotor exceeds a predetermined speed, relay means comprising a coil in series with said switch contacts and having contacts in series with said start capacitor, double throw selector switch means having a high speed position and an alternative low speed position for connecting said centrifugally actuated switch means contacts in series with said low speed main winding and one of said terminals when in the high speed position and for connecting said centrifugally actuated switch means contacts in series with said high speed main winding and one of said terminals when in the low speed position, said relay means operating to open said relay contacts when current through said relay coil is interrupted by the opening of the series connected speed actuated switch contacts.

4,341,988
VOLTAGE LEVEL DETECTOR FOR BATTERY CHARGER CONTROL CIRCUIT

James E. Small, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jun. 25, 1980, Ser. No. 162,826
Int. Cl.³ H02J 7/10
U.S. Cl. 320—31 2 Claims



1. A battery charger, comprising:

power supply circuit means adapted to be coupled to a battery during charging thereof;

first voltage regulation means for providing a supply voltage for said detector, said first voltage regulation means being coupled to receive power from said power supply circuit means and including a first zener diode;

second voltage regulation means for providing a stable source of reference voltage, said second voltage regulation means being coupled to receive power from said detector supply voltage and including a second zener diode having a very stable reverse bias voltage for providing said reference voltage source;

voltage comparator means having one input thereof coupled to said stable reference voltage source;

circuit means for coupling said battery to the other input of said voltage comparator means, said circuit means for coupling being adapted to couple a proportion of the battery voltage which proportion equals said stable reference voltage when said battery voltage reaches a predetermined level;

control circuit means responsive to the output of said voltage comparator means for controlling the charging of said battery in response to said battery voltage reaching said predetermined maximum level, said control circuit means including means for terminating the charging of said battery in response to said battery voltage reaching said predetermined maximum level;

a second voltage comparator means having an input thereof coupled to said stable reference voltage source;

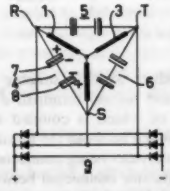
second circuit means for coupling said battery voltage to the other input of said second voltage comparator means, said second circuit means for coupling being adapted to couple a proportion of said battery voltage, which proportion equals said stable reference voltage when said battery voltage reaches a secondary predetermined level which is substantially higher than said predetermined maximum level; and

second control circuit means responsive to the output of said second voltage comparator means for disabling the terminating function of first said control circuit means when said secondary voltage level is reached.

4,341,989
DEVICE FOR PHASE COMPENSATION AND EXCITATION OF AN ASYNCHRONOUS MACHINE OPERATING AS A GENERATOR

Torvald Sandberg, and Stig Forsberg, both of Lulea, Sweden, assignors to Elmekano i Lulea AB, Lulea, Sweden

Filed Feb. 26, 1980, Ser. No. 124,774
Claims priority, application Sweden, Mar. 8, 1979, 7902102
Int. Cl.³ H02P 9/30, 9/00; H02K 11/00
U.S. Cl. 322—95 7 Claims

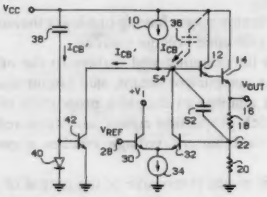


1. A device for phase compensation and excitation of a multiphase asynchronous machine with a short-circuited laminated rotor or a massive rotor with salient poles, during the operation of the machine as a generator, each winding being connected in series or in parallel with a capacitive element, characterized in that the capacitive element consists of a bank of capacitors (4 to 6) with at least one pair of series connected electrolytic capacitors (7, 8), having in each pair equal terminals interconnected.

4,341,990
HIGH FREQUENCY LINE RIPPLE CANCELLATION CIRCUIT

William F. Davis, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 27, 1981, Ser. No. 258,227
Int. Cl.³ G05F 1/56
U.S. Cl. 323—303 11 Claims



6. A circuit for cancelling parasitic current at a node due to voltage excursions across a first capacitance coupled to said node, comprising:

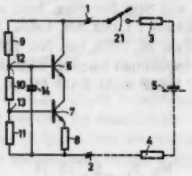
capacitive means responsive to said voltage excursions for generating a first current substantially equal to said parasitic current; and

means coupled to said capacitive means and to said node for substantially cancelling the net current at said node due to said voltage excursions.

4,341,991
VOLTAGE STABILIZER SUITABLE FOR A TELEPHONE SET

Josephus J. A. Geboers; Daniël J. G. Janssen, and Johannes Bloos, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,724
Claims priority, application Netherlands, Oct. 1, 1979, 7907275
Int. Cl.³ G05F 1/613
U.S. Cl. 323—311 5 Claims

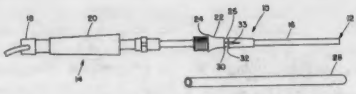


1. A voltage stabiliser which is suitable for a telephone set comprising a first and second terminal, a first transistor the main current path of which is coupled to the terminals, a voltage divider arranged between the terminals, a first tapping poing of the voltage divider being connected to the base of the transistor, and a capacitor connected between the base of the transistor and a second terminal, the emitter of the first transistor circuit is coupled to this second terminal, characterized in that the stabiliser comprises a resistor and a second transistor circuit the main current path of which is connected in series with the resistor between the main current path of the first transistor and the second terminal and that the base of the second transistor is connected to a second tapping point on the voltage divider, this second tapping point being located on the part of the voltage divider lying between the first tapping point and the second terminal.

4,341,992
CONDUCTIVE PROBE COVER

Harold Goldstein, Westbury, N.Y., assignor to Control Electronics Co., Inc., Farmingdale, N.Y.

Filed Jan. 21, 1980, Ser. No. 113,508
Int. Cl.³ G01R 31/02; G01K 7/22
U.S. Cl. 324—65 R 19 Claims

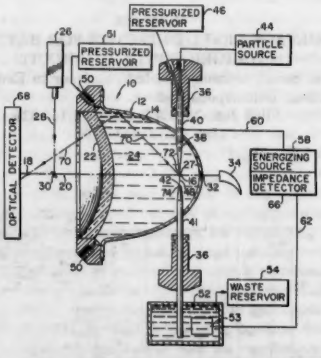


1. A protective probe cover, for a sensor probe component of an electronic thermometer, having an improved design to ensure that the probe cover is properly fitted onto the probe of the electronic thermometer, the electronic thermometer including a verification circuit for electrically ascertaining that the probe cover is properly fitted onto the probe, said probe cover being formed of a relatively thin layer of synthetic resin material, said synthetic resin material having a conductive material therein to render the probe cover electrically conductive to allow the verification circuit to conductively ascertain that the probe cover is properly positioned on the probe, said probe and said probe cover forming a resistive path having a predetermined resistance when said probe cover is properly fitted on said probe, wherein said verification circuit comprises means connected to said probe and probe cover for comparing the resistance of said resistive path to at least one predetermined resistance value and operative when the predetermined resistance of said resistive path is below the predetermined resistance value, and means responsive to operation of said operative means for enabling the electronic thermometer to respond to the temperature of its sensor probe.

4,341,993
REFLECTOR OPTICS WITH IMPEDANCE SENSING ORIFICE

Albert Brunsting, Miramar; Walter R. Hogg, and William A. Newton, both of Dade County, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Aug. 25, 1980, Ser. No. 181,447
Int. Cl.³ G01N 27/00
U.S. Cl. 324—71 CP 16 Claims



1. A particle analyzing apparatus for detecting the physical properties of particles, said particle analyzing apparatus including first vessel means containing a first electrode disposed in a first quantity of electrolyte, second vessel means containing a second electrode disposed in a second quantity of electro-

lyte, orifice means for establishing a constricted electrical path between said electrodes by providing a passageway between the vessel means for a sample flow of one of said quantities of electrolyte having a stream of said particles suspended therein, means for energizing said electrodes to provide an electrical current through said orifice means, means for detecting the impedance of said constricted electrical path, the particle analyzing apparatus further comprising:

said second vessel means being defined by at least a portion of a reflector chamber;

said reflector chamber including a concave reflector surface with a first focus and a second focus;

means for moving said stream of particles through said first focus;

a source of radiant energy arranged to irradiate the particles as they pass through said first focus to produce a source of detectable radiation signals at said first focus; and

means for detecting the detectable radiation signals after they have been reflected from said concave reflector surface.

4,341,994

POWER LEVEL MEASUREMENT SYSTEM

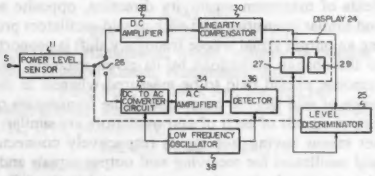
Tetsuro Kawasaki, and Hiromichi Toda, both of Tokyo, Japan, assignors to Anritsu Electric Company Limited, Tokyo, Japan

Filed Mar. 31, 1980, Ser. No. 135,904

Claims priority, application Japan, Mar. 31, 1979, 54-37741

Int. Cl.³ G01R *15/10, 21/04*

U.S. Cl. 324—132 **5 Claims**



1. A power level measuring system for measuring the power level and amplitude of an input signal, comprising:

a power level sensor comprising a diode, coupled to receive said input signal and responsive thereto for producing an output signal indicative of the power level of said input signal, said output signal varying in amplitude in a linear manner with respect to variations in the power level of said input signal for values of said input signal power level which are below a predetermined threshold value of said diode;

first amplifier means for amplifying said output signal from said power level sensor;

second amplifier means for amplifying said output signal from said power level sensor and further for compensating for a non-linear relationship between said input signal applied to said power level sensor and said output signal from said power level sensor when said input signal is above a predetermined level, said second amplifier means comprising a DC amplifier coupled to receive said power level sensor output signal and a linearity compensation circuit coupled to receive an output signal from said DC amplifier for compensating said power level of said output signal from said DC amplifier when said input signal is above said predetermined threshold value of said diode;

display means for displaying the power level and amplitude of said input signal applied to said power level sensor, said display means comprising a display device coupled to receive output signals from said first and second amplifier means for thereby displaying a power level of said input signal, and a cathode ray tube display device coupled to receive an output signal from said second amplifier means for thereby displaying an amplitude of said input signal;

level discriminator means coupled to receive output signals from said first and second amplifier means, for selectively producing control signals in accordance with whether either one of an output signal from said first amplification means and an output signal from said second amplifier means is above a value corresponding to said predetermined level of said input signal; and

switching means responsive to said control signals from said level discriminator means for selectively applying said output signal from said first amplifier means and said output signal from said second amplifier means to said display means.

4,341,995

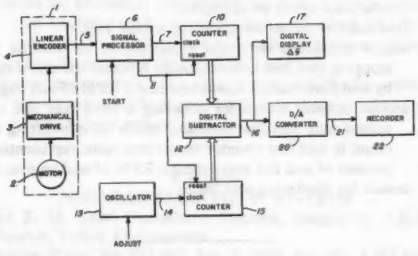
VELOCITY PROFILE ANALYZER

Robert P. Hennick, Dudley, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed May 29, 1981, Ser. No. 268,637

Int. Cl.³ G01P *3/56*

U.S. Cl. 324—161 **9 Claims**



1. An apparatus for measuring the velocity change of a moving mechanical component, including means for generating an encoded electrical signal in accordance with movement of said mechanical component, said encoded electrical signal including an index signal and a velocity representative signal, comprising:

signal processing means coupled to receive said encoded electrical signal, for providing said velocity representative signal at a first output and said index signal at a second output;

first counter means coupled to said signal processing means, said first counter means having a clock input connected to said first output for receiving said velocity representative signal, and a reset input connected to said second output for receiving said index signal, said first counter means having an output;

oscillator means for generating a signal having a predetermined frequency;

second counter means having a clock input coupled to receive said oscillator signal, and a reset input connected to said second output for receiving said index signal, said second counter means having an output;

digital subtractor means having a first input connected to the output of said first counter means, and a second input connected to the output of said second counter means, said digital subtractor means having an output; and,

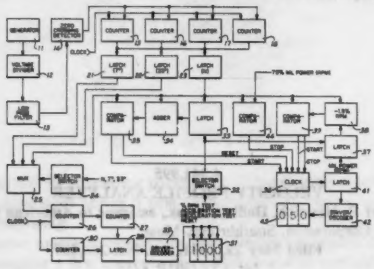
digital display means connected to the output of said digital subtractor means for providing a numerical display of the velocity change of the moving mechanical component.

4,341,996

SPEED MEASURING APPARATUS FOR INDICATING PERCENTAGE OF NOMINAL FULL SPEED, ACCELERATION AND DECELERATION

Kenneth L. Coffman, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 20, 1981, Ser. No. 265,475
Int. Cl.[3] G01P *3/42, 15/00*
U.S. Cl. 324—162 8 Claims



1. A speed measuring device for indicating a percent of full speed design RPM of an engine comprising,

signal means for providing frequency signals proportional to rotational speed of an engine,

first counter means for counting a fixed rate,

means connected with said signal means for starting and stopping said first counter means wherein the count made by said first counter means represents RPM of said engine,

second counter means for counting a fixed rate and connected with said first counting means for converting said count in said first counter means to a value representing a percent of said full speed design RPM of said engine, and

means for displaying said value.

4,341,997

MAGNETIC PARTICLE INSPECTION PROCESS USEABLE WITH SIMULTANEOUS ILLUMINATION BY ULTRA-VIOLET AND WHITE LIGHT

Kenneth P. Borrows, Schaumburg, Ill., assignor to Magnaflux Corporation, Chicago, Ill.

Filed Nov. 14, 1979, Ser. No. 94,764
Int. Cl.[3] G01R *33/00;* G01N *27/84*
U.S. Cl. 324—215 5 Claims

1. A method of non-destructive testing of a magnetizable workpiece which comprises:

applying to the surface of said workpiece discrete magnetic particles having a ferromagnetic particle core, fluorescent pigment particles physically attached to said core and a cascading opacifier, said fluorescent pigment particles being at least 10 microns in maximum dimension, said magnetic core particles having a maximum dimension at least twice as large as the maximum dimension of said fluorescent pigment particles,

creating a magnetic field along said workpiece so that the particles are attracted to imperfections therein, and

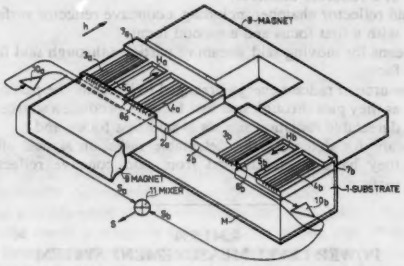
inspecting said workpiece for imperfections while simultaneously illuminating said workpiece with separate sources of ultra-violet and white light, said magnetic particles having the property of fluorescing with a brightness of at least 20 foot-lamberts when irradiated with 365 nm ultraviolet light at an intensity of 1000 microwatts/cm^2, the ambient white light level being at least 10 foot-lamberts.

4,341,998

MAGNETOSTATIC WAVE MAGNETOMETER

Jean P. Castera, and Pierre Hartemann, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 25, 1980, Ser. No. 124,076
Claims priority, application France, Feb. 27, 1979, 79 05006
Int. Cl.[3] G01R *33/02;* H03B *21/00*
U.S. Cl. 324—244 9 Claims



1. A magnetostatic wave magnetometer for measuring a field comprising:

at least two magnetostatic wave oscillators each having a magnetic material layer subject to the action of said field to be measured and said oscillators having inductor means for subjecting said layers respectively to given magnetic fields of maximum sensitivity direction, opposite senses and similar intensities with each of said oscillators producing an output signal whose frequency shift is proportional to the change undergone by its given magnetic field in response to said field to be measured wherein in the absence of said field to be measured the frequencies of the output signals of each of said oscillators are similar; and

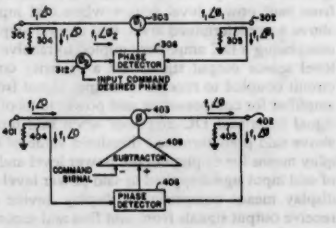
mixer means having two inputs respectively connected to said oscillators for receiving said output signals and supplying a signal whose frequency is equal to the difference between the oscillation frequencies of said two oscillators and is variable as a function of the component of said field to be measured in said direction, whereby said supplied signal is at a lower frequency range than said oscillator output signals.

4,341,999

HIGH ACCURACY PHASE SHIFT CONTROL SYSTEM

Ronald M. Rudish, Commack, and Peter J. McVeigh, Hauppauge, both of N.Y., assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 25, 1980, Ser. No. 181,457
Int. Cl.[3] H03K *5/13*
U.S. Cl. 328—155 6 Claims



1. Apparatus for accurately controlling the phase of a first signal comprising:

(a) means for shifting the phase of the first signal, said means for shifting having an input, an output and a control port,

the first signal being applied to the input port and extracted from the output port with a phase shift determined by a second signal, which is applied to the control port,

(b) first means for sampling a portion of the first signal, connected to the input port of said means for shifting the phase,

(c) second means for sampling a portion of the first signal connected to the output of the means for shifting the phase,

(d) means for sensing phase having a first and second input port and an output port, the first input port being connected to the first means for sampling while the second input port is connected to the second means for sampling to accept and determine the phase difference between the sampled signals and produce at the output port of the means for sensing phase the second signal related to the phase difference of the sampled signals,

(e) second phase shifting means designated the reference phase shifting means having an input port and output port and a control port, the second phase shifting means connected in series between one of the sampling means and the phase sensing means to shift the phase of one of the sampled signals in accordance with an independent fourth signal applied to the control port of the reference phase shifting means, and

(f) means for applying said second signal from the output of the means for sensing phase to the control port of the first means for shifting the phase to drive the first phase shifting means to the phase angle of the reference phase shifting means.

4,342,000

FM DETECTING CIRCUIT

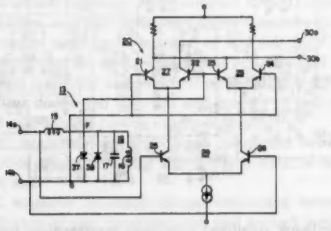
Minoru Ogita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 28, 1980, Ser. No. 135,149

Claims priority, application Japan, Apr. 4, 1979, 54-44238[U]; Oct. 26, 1979, 54-148470[U]

Int. Cl.³ H03D *3/14, 3/26*

U.S. Cl. 329—103 **6 Claims**



1. An FM quadrature detecting circuit comprising:

phase-shifting means comprised of a series connection of a coil and an LC resonance circuit for effecting a $\pi/2$ phase-shift of an FM input signal,

said LC resonance circuit being arranged so that its resonance frequency is tuned to a carrier frequency of said FM input signal and being operative so that a resonance characteristic of said LC resonance circuit in the vicinity of said resonance frequency is utilized to deviate a phase of said FM input signal in proportion to a deviation of frequency of said FM input signal relative to said resonance frequency,

multiplying means for switching said FM input signal by the output from said phase-shifting means, said multiplying means producing an output signal wherein the deviation of phase is converted to a variation in said output signal, to be used as an FM detection output, and

a damping element connected to said LC resonance circuit so as to provide an intensive damping action for said LC circuit at said resonance frequency, and to provide a lesser damping action as the frequency of said input signal deviates farther from said resonance frequency.

4,342,001

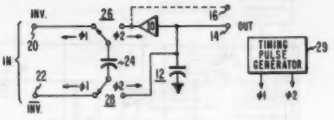
DIFFERENTIAL AMPLIFIER HAVING A LOW-PASS CHARACTERISTIC

Donald J. Sauer, Plainsboro, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 17, 1980, Ser. No. 131,045

Int. Cl.³ H03F *1/02*

U.S. Cl. 330—9 **9 Claims**



1. A differential amplifier having a low-pass characteristic comprising, in combination:

first and second amplifier input terminals for receiving an input signal thereacross;

first and second capacitors;

a voltage follower having an input terminal connected via said second capacitor to a point of reference potential;

means for alternately connecting said first capacitor across said amplifier input terminals and connecting said first capacitor in parallel with said voltage follower during mutually exclusive time periods, and

output means coupled to a point in said amplifier for providing an output voltage proportional to the state of charge of said second capacitor.

4,342,002

MODULAR ELECTRONIC SYSTEMS

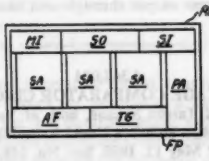
Saad Z. M. Gabr, Canterbury, England, assignor to A.R.D. Anstalt, Vaduz, Liechtenstein

Division of Ser. No. 911,906, Jun. 2, 1978, Pat. No. 4,203,147, which is a division of Ser. No. 695,569, Jun. 14, 1976, Pat. No. 4,096,546, which is a continuation of Ser. No. 492,976, Jul. 26, 1974, abandoned. This application Feb. 8, 1980, Ser. No. 119,646

Claims priority, application United Kingdom, Aug. 2, 1973, 36803/73; Aug. 10, 1973, 37961/73; Aug. 24, 1973, 40263/73; Sep. 20, 1973, 44227/73

Int. Cl.³ H03F *1/00*

U.S. Cl. 330—65 **7 Claims**



1. A multi-channel amplifier system comprising a cabinet containing signal input means, preliminary signal treatment means, signal amplification means and signal output means, wherein the signal input means and the signal output means are located at a first wall of the cabinet, wherein the preliminary signal treatment means is located at a second wall of the cabinet opposite the first wall and includes an active filter device arranged to divide an input signal extending over at least the major part of the audio frequency range into a plurality of signals extending substantially over a respective part only of

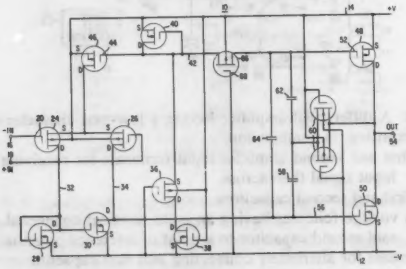
the audio frequency range, and wherein the signal amplification means consists of a plurality of separate amplifiers each arranged to amplify less than all of the divided signals and each located with its input adjacent the active filter device and its output adjacent the signal output means.

4,342,003

OPERATIONAL AMPLIFIER WITH INCREASED SETTLING SPEED

Veikko R. Saari, Spring Lake Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 17, 1980, Ser. No. 131,238
Int. Cl.³ H03F 3/45
U.S. Cl. 330—253 **8 Claims**



1. An operational amplifier (10) comprising positive and negative power supply nodes (14, 12); a differential input stage with first and second inputs (16, 18) and first and second output nodes (34, 32); an output stage comprising a first, output transistor (50) connected in a common-source configuration and having a first control electrode (56) connected to said first input stage node (34); and, bias means for elements of said input stage and output stage; said bias means comprising a control node (42) and a second, bias current source transistor (48) connected in series with said output transistor (50) between said power supply nodes (14, 12) and having a second control electrode (52), said amplifier being characterized by:

barrier means (66), connected at one side to said second control electrode (52) and at another side to said control node (42) of said bias means, for substantially preventing signals of at least a selected frequency or amplitude threshold value from passing to other elements of said bias means from said second control electrode (52), and

filter means (64, 72, 78, 80) connected between a signal source and said second control electrode (52), said filter means (64, 72, 78, 80) being responsive to pass signals of at least said selected frequency or amplitude threshold value to result in additional current output through said bias current source transistor (48).

4,342,004

VOLTAGE COMPARATOR CIRCUIT

Tetsuya Iida, and Tatsuo Sakaue, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed May 12, 1980, Ser. No. 148,724
Claims priority, application Japan, May 15, 1979, 54-59303; May 15, 1979, 54-59304
Int. Cl.³ H03F 3/45
U.S. Cl. 330—253 **22 Claims**

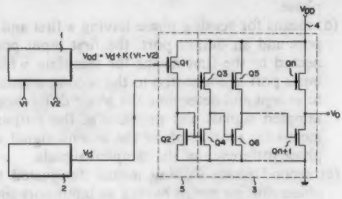
1. A voltage comparator comprising:

a differential amplifier section for producing a signal corresponding to a difference between two input signals;

a differential amplifier section output bias voltage generating section for producing a voltage corresponding to the output bias voltage of said differential amplifier section;

a linear amplifier section in which a plurality of driver elements and a plurality of load elements are connected, and of which a DC operating point is determined by a voltage from said differential amplifier section output bias voltage generating section; and

a converting section which is inserted between said differential amplifier section and said linear amplifier section, and converts the DC output bias voltage from said differential



amplifier section into the DC operating point of said linear amplifier section;

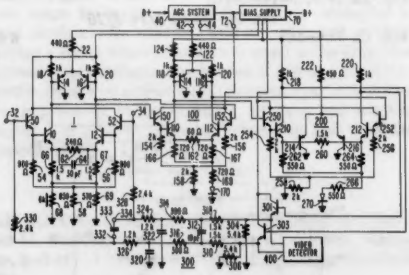
wherein said differential amplifier section, the differential amplifier section output bias voltage generating section, said linear amplifier section, and said converting section are comprised of MOS transistors of the same channel.

4,342,005

TELEVISION INTERMEDIATE FREQUENCY AMPLIFIER WITH FEEDBACK STABILIZATION

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,144
Int. Cl.³ H03G 3/30
U.S. Cl. 330—254 **6 Claims**



1. A feedback stabilized television intermediate frequency amplifier system comprising:

an automatic gain control system for supplying a gain control signal;

a plurality of gain controlled differential amplifiers direct current coupled in a cascade configuration for amplifying intermediate frequency signals, each of said amplifiers being coupled to said automatic gain control system and responsive to said gain control signal for varying the intermediate frequency signal gain of each of said amplifiers, the D.C. biasing of at least one of said amplifiers being substantially invariant to changes of said gain control signal, the first of said cascade coupled amplifiers including first and second differentially coupled amplifying transistors having base electrodes coupled to respective first and second input terminals, and the last of said cascade coupled amplifiers including third and fourth differentially coupled amplifying transistors having respective collector electrodes comprising first and second output electrodes of said amplifying system; and

a first D.C. feedback path coupled between said first output electrode and said first input terminal, and a second D.C. feedback path coupled between said second output electrode and said second input terminal, said feedback paths each exhibiting a voltage gain not greater than unity over a range of frequencies including D.C. and said television intermediate frequencies.

4,342,006

AMPLIFIER CIRCUIT FOR SUPPLYING LOAD WITH OUTPUT SIGNAL CURRENT PROPORTIONAL TO INPUT SIGNAL VOLTAGE

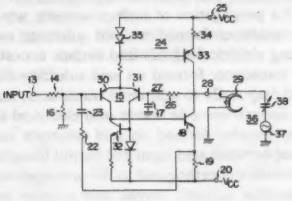
Yuzo Ishigaki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Feb. 12, 1980, Ser. No. 120,767

Claims priority, application Japan, Feb. 16, 1979, 54-18841[U]

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—259 **7 Claims**



1. An amplifier circuit comprising:

an output terminal;

first and second power supply terminals;

an amplifier having first and second inputs and an output, said first input being connected to receive an input signal and being one of inverting and noninverting inputs and said second input being the other of inverting and noninverting inputs;

a transistor having a base, an emitter and a collector, said base of said transistor being coupled to said output of said amplifier, and said collector of said transistor being connected to said output terminal of said amplifier circuit;

a constant-current source connected between said collector of said transistor and said first power supply terminal;

a resistor connected between said emitter of said transistor and said second power supply terminal;

an AC negative feedback circuit connected between said emitter of said transistor and said first input of said amplifier; and

a DC negative feedback circuit connected between said collector of said transistor and said second input of said amplifier.

4,342,007

SWEPT FREQUENCY OSCILLATOR WITH COMPENSATION FOR VARIATIONS IN TUNING SENSITIVITY

Robert Elliott, St. Albans, England, assignor to Marconi Instruments Limited, Chelmsford, England

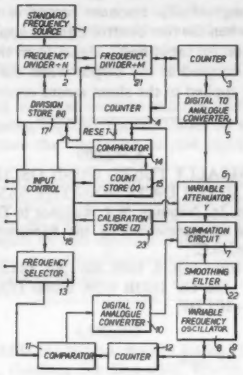
Filed May 2, 1980, Ser. No. 146,731

Claims priority, application United Kingdom, May 4, 1979, 7915711

Int. Cl.³ H03B *23/00*; H03L *7/08*

U.S. Cl. 334—4 **13 Claims**

1. A swept frequency oscillator arrangement including a variable frequency oscillator which provides a variable frequency output signal in dependence on the magnitude of a control signal; means for generating a succession of pulses derived from a fixed frequency source; means responsive to said pulses for producing said control signal; and means for varying the rate at which said pulses are generated so as to



compensate for variations in the tuning sensitivity of said oscillator.

4,342,008

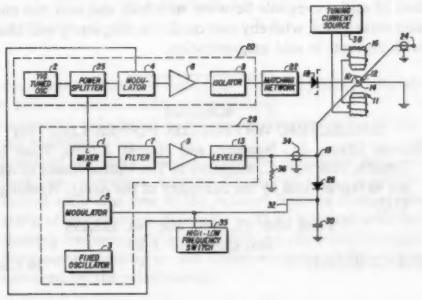
SWITCHED TUNEABLE FREQUENCY MULTIPLIER

Robert E. Jewett, Berkeley, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 29, 1981, Ser. No. 229,473

Int. Cl.³ H03B *19/00, 23/00*; H01P *1/218*

U.S. Cl. 331—49 **9 Claims**



1. A tuneable frequency multiplier comprising:

electromagnetically resonant means having a variable resonance frequency;

first signal input means for receiving a first electromagnetic signal;

harmonic signal generating means connected to the first signal input means for generating a harmonic signal in response to the first electromagnetic signal;

first coupling means connected to the harmonic signal generating means for coupling the harmonic signal to the electromagnetically resonant means;

an output;

second coupling means connected to the output for coupling a signal from the electromagnetically resonant means to the output;

second signal input means for receiving a second electromagnetic signal connected to the second coupling means at a coupling node;

electrically controlled shunt means connected to the coupling node and having a control input for shunting the coupling node means to ground in response to a first

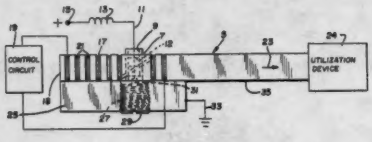
control signal on the control input and for isolating the coupling node from ground in response to a second control signal on the control input whereby a signal from the electromagnetically resonant means is coupled to the output when the first control signal is applied to the shunt means control input and a signal from the second signal input is coupled to the output when the second control signal is applied to the shunt means control input.

4,342,009

ELECTRONICALLY TUNED GUNN OSCILLATOR AND MIXER INCLUDING THE SAME

Samuel Dixon, Jr., Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 5, 1980, Ser. No. 184,456
Int. Cl.[3] H03B 9/14; H04B 1/26
U.S. Cl. 331—107 DP 12 Claims



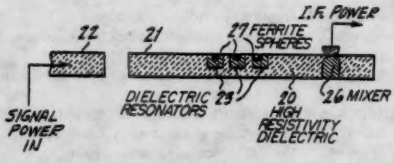
7. A mm and sub mm oscillator comprising a length of dielectric image waveguide capable of supporting low loss propagation at mm and sub mm wavelengths, a Gunn diode mounted with its anode projecting inside a hole in said waveguide near one end therein, means to bias said Gunn diode into a negative resistance region, means to vary the dc magnetization of said waveguide between said hole and said one end of said waveguide, whereby said oscillator frequency will change with changes in said magnetization.

4,342,010

DIELECTRIC WAVEGUIDE POWER LIMITER

Samuel Dixon, Jr., Neptune, and Harold Jacobs, West Long Branch, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 27, 1980, Ser. No. 153,299
Int. Cl.[3] H01P 1/23
U.S. Cl. 333—17 L 14 Claims



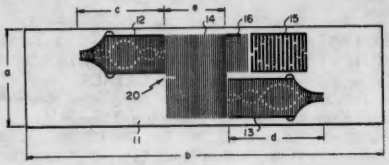
1. A microwave device, which comprises:
- a high resistivity dielectric waveguide including means for coupling millimeter or sub-millimeter wave microwave energy from an external source into the waveguide;
- a self-oscillating device positioned in said dielectric waveguide; and
- a plurality of high dielectric-constant resonators, comprising ferrite and biased to a subsidiary resonance state, interposed between said energy coupling means and said self-oscillating device for limiting the power fed to said self-oscillating device.

4,342,011

SURFACE ACOUSTIC WAVE DEVICE

Hisao Iwamoto, and Noboru Wakatsuki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 25, 1980, Ser. No. 190,645
Claims priority, application Japan, Sep. 25, 1979, 54-121933
Int. Cl.[3] H03H 9/25, 9/42, 9/64, 9/66
U.S. Cl. 333—151 5 Claims



1. A surface acoustic wave device comprising:
- a substrate made of piezoelectric material and having a plane surface for propagation of surface acoustic waves;
- an input transducer formed on said substrate surface, for converting electrical signals into surface acoustic waves;
- an output transducer formed on said substrate surface and arranged diagonally to said input transducer, for converting said surface acoustic waves into electrical signals;
- a multistrip coupler formed on said substrate surface and interposed between said input and output transducers to as to be substantially orthogonal to the propagation direction of said surface acoustic waves, said coupler including a plurality of parallel conductors;
- a reflecting transducer formed on said substrate surface and arranged opposite to said input transducer with said multistrip coupler therebetween and parallel to said output transducer, the reflecting transducer including electrodes and adapted to reflect said surface acoustic waves;
- said electrodes of said reflecting transducer being weighted and the number of conductors of said multistrip coupler being adjusted, whereby the intensity of reflection of said surface acoustic waves by said output transducer is equal to the intensity of reflection of said surface acoustic waves by said reflecting transducer; and
- means for adjusting to a phase difference between said reflections so as to be $(2n-1)\lambda/2$, where "λ" is a wavelength at a center frequency of said surface acoustic waves and "n" is a positive integral number, said phase difference adjusting means comprising phase adjusting strips formed on said substrate surface and interposed between said reflecting transducer and said multistrip coupler, said phase adjusting strips including a plurality of parallel conductors.

4,342,012

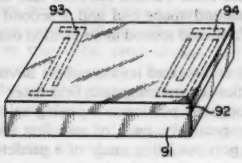
SURFACE ACOUSTIC WAVE DEVICE

Ritsuo Inaba, Hirakata, and Kiyotaka Wasa, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 18, 1981, Ser. No. 235,751
Claims priority, application Japan, Feb. 19, 1980, 55/20267
Int. Cl.[3] H03H 9/42, 9/64; H03B 5/32; H01L 41/18
U.S. Cl. 333—155 11 Claims

1. A surface acoustic wave device comprising
- an X-cut $LiTaO_3$ single crystal substrate,
- a SiO_2 film formed over one major surface of said substrate, and

interdigital electrodes formed over said major surface and oriented such that the direction of propagation of surface



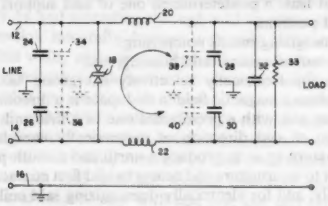
acoustic waves is between 80° and 180° measured from the Y-axis toward the Z-axis.

4,342,013

BIDIRECTIONAL POWER LINE FILTER

Mathew R. Kallman, East Norwich, N.Y., assignor to Pilgrim Electric Co., Plainview, N.Y.

Filed Aug. 25, 1980, Ser. No. 181,017
Int. Cl.³ H03H *7/01, 7/09*
U.S. Cl. 333—181 **14 Claims**



1. A bidirectional filter for connection in the phase, neutral, and ground lines of a power distribution system, comprising:

first and second inductors arranged in the phase and neutral lines, respectively;

at least one lumped parameter capacitor connected between the phase line and the ground line and the neutral line and the ground line electrically before and electrically after said inductors in said phase and neutral lines; and

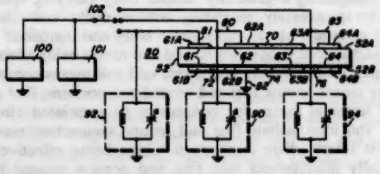
distributive capacitance means connected in shunt electrically with each of said lumped parameter capacitors from the phase line to the ground line and from the neutral line to the ground line, respectively.

4,342,014

MULTI-RESONATOR CRYSTAL FILTER HAVING A REDUCED NUMBER OF PINS AND METHOD OF FABRICATION THEREOF

Aristotelis Arvanitis, Addison, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 5, 1981, Ser. No. 222,430
Int. Cl.³ H03H *3/04, 9/56, 9/15*
U.S. Cl. 333—191 **5 Claims**



1. A multi-resonator crystal device comprising:

a piezoelectric crystal blank having first and second opposed surfaces;

at least four resonators disposed on said crystal blank, each resonator including a first electrode situated on said first surface and a second electrode situated on said second surface opposite said first electrode, two of said at least four resonators being designated input and output resonators;

first connecting means situated on said first surface for electrically coupling together the electrodes on said first surface other than the electrodes of said input and output resonators;

second connecting means situated on said second surface for electrically coupling together said second electrodes, and

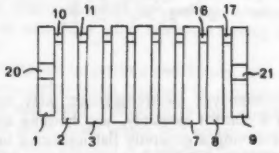
said first and second connecting means being situated sufficiently far apart on said opposed crystal surfaces so as to prevent formation of another resonator by said first and second connecting means.

4,342,015

ELECTROMECHANICAL BAND PASS FILTERS

Herbert Ernyei, Conflans Ste Honorine, France, assignor to Lignes Telegraphiques et Telephoniques, Conflans Ste Honorine, France

Filed Jul. 17, 1980, Ser. No. 169,655
Claims priority, application France, Jul. 18, 1979, 79 18570
Int. Cl.³ H03H *9/24, 9/50*
U.S. Cl. 333—197 **4 Claims**



1. An electromechanical band pass filter comprising a plurality of cells in cascade, each cell including:

two parallel cylindrical bars forming longitudinally vibrating resonators; and

a flexurally vibrating cylindrical coupler connected between said two resonators, wherein the cell of rank i is dimensioned such that one of the relative limiting frequencies (Ω^L_j) of its frequency band $(\Omega_i^- - \Omega_i^+)$ is linked with the limiting frequency (f_i^+) of a cell for an electrical low-pass filter corresponding to said electromechanical filter to be obtained by the relationship:

$$f_i^+ = \frac{A}{\sin a_{ci} + \sinh a_{ci}} \left[\frac{\tan a_{ri}}{\sqrt{\Omega^L_j}} (1 - \cos a_{ci} \cosh a_{ci}) - \right.$$

$$\left. 2.539\ (\Omega^L_j - 1)\ (\sin a_{ci} \cosh a_{ci} + \cos a_{ci} \sinh a_{ci}) \right]$$

where:

A is a constant

$$a_{ci} = \frac{\pi}{4} \sqrt{\Omega^L_j} \cdot \frac{l_c}{l_o}$$

where l_c is the length of said coupler and l_o the length of said coupler corresponding to a quarter wave effect at the central frequency of the band of frequencies to be transmitted by said electromechanical filter

$a_{ri} = 2\pi n_r \Omega^L_j m$ where m is the order of the vibration mode

and where $n_r=(l_r/\lambda_o)$ with l_r the length of said resonators and λ_o the wavelength at the tuning frequency of said resonators in longitudinal vibration.

4,342,016

TRANSFER-TYPE ELECTROMAGNETIC RELAY COMPRISING A COIL AROUND A HOUSING OF THE RELAY AND AN ARMATURE CARRYING MOVABLE CONTACTS AT BOTH ENDS

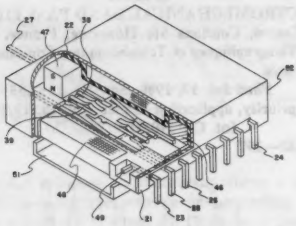
Kiyotaka Yokoo; Sadayuki Mitsuhashi, and Kazutoshi Wakamatsu, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 18, 1980, Ser. No. 179,269

Claims priority, application Japan, Aug. 20, 1979, 54-105796; Aug. 20, 1979, 54-105797; Nov. 8, 1979, 54-144698; Nov. 8, 1979, 54-144699

Int. Cl.³ H01H *50/04, 51/01, 51/29*

U.S. Cl. 335—79 **17 Claims**



1. In a transfer-type electromagnetic relay comprising a housing and a contact assembly, said housing comprising a base member having a generally flat insulative inner surface and a cap member defining in cooperation with said inner surface a space having a predetermined height, a first and a second space end, and a space axis extended parallel to said inner surface through said first and said second space ends, said contact assembly comprising a first, a second, and a third lead member fixed to said inner surface adjacent to said first and said second space ends and between said first and said second space ends, respectively, and extended outwardly of said housing, a first and a second fixed contact stud attached in said space to a first predetermined point of said first lead member and a second predetermined point of said second lead member, respectively, an armature member in said space, and a first and a second movable contact stud carried by said armature member so as to form a first and a second contact in cooperation with said first and said second fixed contact studs, respectively, said armature member having a transverse axis transversely of said space axis and intermediately between said first and said second space ends, said armature member being held on said third lead member for seesaw movement about said transverse axis and electrically connecting said first and said second movable contact studs to said third lead member, said relay further comprising energizing means for selectively electromagnetically energizing and deenergizing said armature member to carry out transfer of contact between said first and said second contacts, and latching means for latching said armature member so as to keep at least a predetermined one of said first and said second contacts closed while said armature member is left deenergized, the improvement wherein:

said third lead member comprises a support portion fixed intermediately between said first and said second space ends to said inner surface and a lead portion extended from said support portion towards at least a predetermined one of said first and said second space ends and further extended outwardly of said housing;

said first lead member comprising a first inner portion fixed to said inner surface between said support portion and said first space end and a first outer portion extended from said first inner portion outwardly of said housing;

said second lead member comprising a second inner portion fixed to said inner surface between said support portion and said second space end and a second outer portion extended from said second inner postion outwardly of said housing;

said first and said second lead members having a first elongated portion comprising said first inner portion and a second elongated portion comprising said second inner portion, respectively, each of said first and said second elongated portions being made of a predetermined material having a predetermined magnetic property and extended parallel to said space axis;

said armature member comprising:

an armature having said transverse axis and mounted on said support portion for said seesaw movement;

an electroconductive leaf spring comprising a central portion fixed onto said armature and a first and a second extension extended from said central portion transversely of said transverse axis towards said first and said second space ends, respectively, with said first and said second movable contact studs attached to said first and said second extensions, respectively; and

connecting means for electrically connecting said leaf spring to at least a predetermined one of said support and said lead portions;

said energizing means comprising:

a coil wound around said housing; and

means for electrically selectively energizing said coil to produce a magnetic field in said space in a direction of said space axis with a preselected one of a first and a second sense of said direction of magnetically energizing said armature so as to produce a north and a south pole adjacent to an armature end nearer to said first contact, respectively, and for electrically deenergizing said coil to make the magnetic field disappear and thereby to magnetically deenergize said armature.

4,342,017

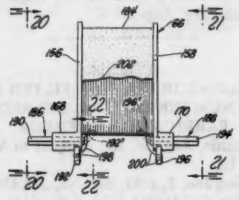
ELECTRICAL RELAY MEANS

Norman A. Rautiola, 430 Upton, Reed City, Mich. 49677

Filed Jul. 23, 1980, Ser. No. 171,451

Int. Cl.³ H01H *67/02;* **H01F** *5/04*

U.S. Cl. 335—128 **56 Claims**



1. A relay assembly, comprising bobbin means, said bobbin means comprising a generally tubular body carrying spaced generally transversely extending bobbin walls, coil means situated generally about said tubular body and contained between said spaced bobbin walls, said coil means being adapted to at times be electrically energized, said coil means comprising wire means having first and second end portions, first and second terminal means for connection to associated circuit means, and intermediate first and second connection means, said first intermediate connection means being effective to electrically interconnect said first end portion to said first terminal means and said second intermediate connection means being effective to electrically interconnect said second end portion to said second terminal means, said first intermediate

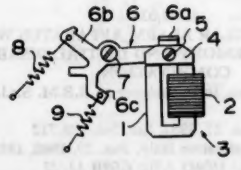
connection means comprising a first electrically conductive connecting member solid in transverse cross-section and substantially larger in transverse cross-section than said wire means and exhibiting a substantially greater resistance to bending than said wire means, said second intermediate connection means comprising a second electrically conductive connecting member solid in transverse cross-section and substantially larger in transverse cross-section than said wire means and exhibiting a substantially greater resistance to bending than said wire means, said first electrically conductive connecting member generally at the area of electrical connection with said first end portion being bent generally toward said coil means, and said second electrically conductive connecting member generally at the area of electrical connection with said second end portion being bent generally toward said coil means, a first relatively enlarged portion formed integrally with one of said spaced bobbin walls and extending generally transversely of said one of said spaced bobbin walls, said first electrically conductive connecting member being carried directly by and extending through said first relatively enlarged portion integrally formed with said one of said spaced bobbin walls, a second relatively enlarged portion formed integrally with an other of said spaced bobbin walls and extending generally transversely of said other of said spaced bobbin walls, said second electrically conductive connecting member being carried directly by and extending through said second relatively enlarged portion integrally formed with said other of said spaced bobbin walls, wherein said first and second electrically conductive connecting members are structurally disconnected from each other except for such structural interconnection as exists through said bobbin walls and bobbin tubular body, and wherein said first and second electrically conductive members are respectively frictionally retained by and in surface-to-surface contact with said first and second relatively enlarged portions formed respectively with said one and said other of said bobbin walls.

4,342,018

MAGNET CONTROL DEVICE FOR CAMERAS

Saburo Numata, Urawa, and Fumio Kobayashi, Omiya, both of Japan, assignors to Fuji Photo Optical Co., Inc., Saitama, Japan

Filed Jul. 11, 1980, Ser. No. 168,677
Claims priority, application Japan, Jul. 12, 1979, 54-88437
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—270 **4 Claims**



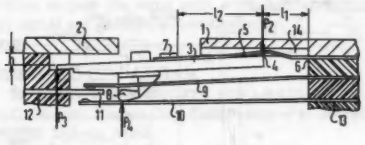
1. A magnet control device for use in a camera comprising a magnet means having an attracting face, a member to be attracted by the magnet means having an attracted face to be put into contact with the attracting face of the magnet means, and a control lever carrying said attracted member, said attracted member being mounted around an axle secured to said control lever for rotation thereabout, wherein the improvement comprises a resilient material disposed between said axle and said attracted member for allowing said attracted member to tilt around the axle to follow an inclination of the attracting face, whereby said attracted face is positionable in perfect face contact with said attracting face.

4,342,019

ELECTROMAGNETIC RELAY WITH A FLAT ARMATURE

Helmut Schedele, Hoegling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 28, 1980, Ser. No. 211,394
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950243
Int. Cl.³ H01H *3/00*; H01F *7/08*; H01H *51/08*
U.S. Cl. 337—274 **5 Claims**



1. An electromagnetic relay comprising:
a yoke plate having a recess therein;
a pole plate disposed substantially coplanar with said yoke plate;
an armature pivotable between a rest position and an operating position which is substantially parallel to said yoke plate and said pole plate for making breaking spring contacts in said relay, said armature having a bearing edge; and
a bearing spring for supporting and biasing said armature, said bearing spring being disposed in said recess in said yoke plate and being connected to said armature at an attachment point about which said armature pivots, said attachment point disposed at a selected distance from said bearing edge such that said bearing edge moves on substantially a single line when said armature is pivoted between said rest position and said operating position whereby said armature pivots causing substantially no contact between said bearing spring and said yoke plate.

4,342,020

ELECTRICAL NETWORK

Ferdinand Utner; Harald Vetter, both of Regensburg, and Ludwig Nutz, Heidenheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

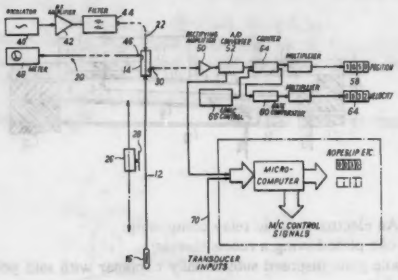
Filed Apr. 9, 1980, Ser. No. 138,708
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916329
Int. Cl.³ H01C *1/012*
U.S. Cl. 338—314 **10 Claims**

1. An electrical network comprising: a metal carrier;
a pair of insulating layers materially bonded to opposite sides of said carrier, said insulating layers being temperature resistant up to at least 200° C.;
a nickel/chromium resistance layer, conductive paths and terminal elements materially bonded to said insulating layers, said terminal elements located adjacent an edge of the network contacting said conductive paths; and
a copper layer carried on said resistance layer.

4,342,021
POSITION OR MOVEMENT SENSOR, E.G. FOR CONVEYANCES SUCH AS LIFTS

Ronald W. Schaller, London, England, assignor to Seltrust Engineering Limited, London, England

Filed Jul. 3, 1980, Ser. No. 165,828
Claims priority, application United Kingdom, Jul. 6, 1979, 7923672
Int. Cl.³ G08G 1/01; B66B 3/02; G01D 5/00
U.S. Cl. 340—38 L 8 Claims

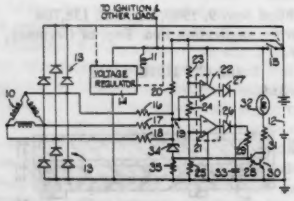


1. A position or movement sensor responsive to relative movement of an object along a path, comprising:
an elongate radiating conductor along the path;
means coupled to one end of said conductor for forming an electromagnetic standing wave in the conductor;
a resonator carried by the object; and
detector means coupled to the said one end of the conductor for detecting cyclical changes in the standing wave characteristics as the resonator moves through the radiated standing wave pattern.

4,342,022
WARNING LAMP ARRANGEMENTS FOR VEHICLE BATTERY CHARGING SYSTEMS

Thomas Nichol, Oxted, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Dec. 28, 1979, Ser. No. 108,198
Claims priority, application United Kingdom, Jan. 6, 1979, 7900489
Int. Cl.³ G08B 21/00
U.S. Cl. 340—52 R 5 Claims

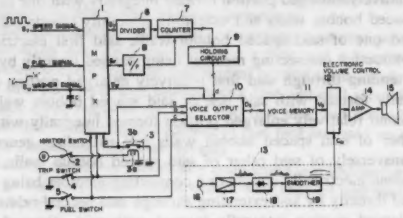


1. A warning lamp arrangement for a vehicle battery charging system including an alternator having an armature winding, a resistor network comprising a plurality of resistors, one end of each resistor being connected to a respective output phase of the armature winding and the other end being connected to a common point, and means sensitive to the voltage waveform at said common point for illuminating a warning lamp when the voltage waveforms exceeds its normal amplitude relationship to the battery voltage, said voltage sensitive means comprising a pair of voltage comparators and a pair of voltage reference sources defining said normal amplitude relationship, and each comparator having one input connected to said common point and its other input connected to a respective one of said voltage reference sources.

4,342,023
NOISE LEVEL CONTROLLED VOICE WARNING SYSTEM FOR AN AUTOMOTIVE VEHICLE

Masakazu Tsunoda, Fujisawa, and Teruo Kawasaki, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Aug. 28, 1980, Ser. No. 182,238
Claims priority, application Japan, Aug. 31, 1979, 54-119116[U]
Int. Cl.³ G08B 21/00; B60Q 5/00
U.S. Cl. 340—52 F 3 Claims



1. A voice warning system for an automotive vehicle, which comprises:
(a) a plurality of information switches;
(b) a multiplexer for selectively outputting one of various signals indicating vehicle operating conditions when one of said switches is depressed;
(c) a voice output selector for outputting a voice output designation signal D_s in accordance with the signal from said multiplexer;
(d) a voice memory for storing a number of voice outputs and for outputting a series of voice signals V_s in response to the voice output designation signal D_s from said voice output selector;
(e) an electronic volume control for controlling the level of voice signals V_s outputted from said voice memory; and
(f) a noise level sensor for detecting the noise level within the passenger compartment and for outputting a control signal C_n to said electronic volume control,
whereby the volume of warning information is automatically controlled according to the noise level within the passenger compartment.

4,342,024
VEHICLE BURGLAR ALARM APPARATUS WITH ELECTRONIC MEMORY AND DIGITAL DISABLING COMBINATION

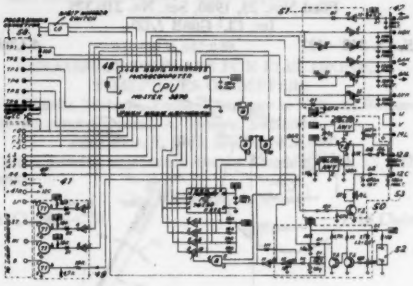
Giovanni Rossi, Milan, Italy, assignor to R.B.M. S.r.l., Milan, Italy

Filed Jan. 27, 1981, Ser. No. 228,712
Claims priority, application Italy, Jan. 29, 1980, 19550 A/80
Int. Cl.³ H04Q 3/02; G08B 13/22
U.S. Cl. 340—64 19 Claims

1. A burglar alarm apparatus with electronic memory and digital disabling combination, particularly for use in motorcars, motor boats or the like, comprising:
(a) an electronic control board having:
(i) a keyboard provided with a plurality of digit combination entering keys, an engine start key, an engine stop key, a garage key, by means of which garage key the apparatus can be disabled after a valid combination has been entered, still keeping the normal ignition key operation on,
(ii) a processing unit, responsive to said keyboard and preferably including a microcomputer, controlling the operation of the whole apparatus, an electronic memory connected

to said microcomputer and having the initial combination stored in, a reset circuit for generating an enabling reset signal for said microcomputer whenever said stop key is depressed; and

(b) an electronic actuating board, responsive to said electronic control board and acting on the main engine circuits and alarms, having:



(i) a driver circuit responsive to the microcomputer outputs and issuing control signals, upon the ignition key insertion, to the power relays which operate the signalling and electrical engine circuits of the motor-car,

(ii) at least one alarm circuit with a time-delay relay.

4,342,025

ARRANGEMENT FOR DETERMINING THE POSITION, ESPECIALLY THE ANGULAR POSITION, OF A MOVABLE BODY

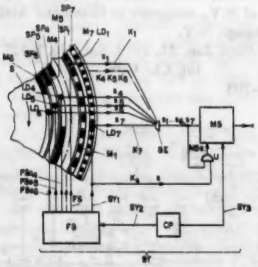
Max Spälti, Mutschellen, and Vladimir Vanek, Urdorf, both of Switzerland, assignors to SSIG Equipment S.A., Bienne, Switzerland

Filed May 9, 1980, Ser. No. 148,201

Claims priority, application Switzerland, May 16, 1979, 4537/79

Int. Cl.³ H03K *13/18*

U.S. Cl. 340—347 P **29 Claims**



1. An arrangement for determining the position of a body having a plurality of tracks of position markings representing coded position information, said arrangement comprising:

(a) a signal generator associated with each of said tracks and arranged to direct detecting signals towards the respective track;

(b) a transmitting channel associated with each of said tracks and arranged to convey information signals received from the respective track in response to said detecting signals away from the respective track;

(c) a signal receiver for said information signals operatively associated with at least some of said transmitting channels;

(d) controlling means operative to cause a batch of said information signals including an information signal from each of said tracks to be delivered to said signal receiver in periodic cycles, said controlling means further being operative to cause the information signals of each batch to be delivered to said signal receiver in a predetermined sequence, and said controlling means also being operative to generate a control signal at a predetermined instant during each of said cycles so as to enable the information signals of each batch to be correlated with the respective tracks;

(e) generating means for intermittently generating a safety signal to prevent garbling of said information signals; and

(f) blocking means for blocking said information signals and operative to pass the same only when said control and safety signal are generated simultaneously.

4,342,026

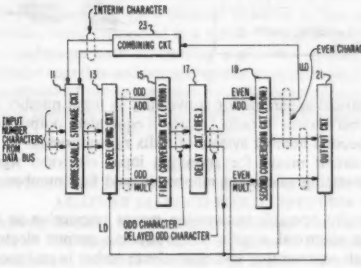
NUMBER CONVERSION APPARATUS

Lawrence G. Hanson, Temple City, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 3, 1980, Ser. No. 156,201

Int. Cl.³ G06F *5/02*

U.S. Cl. 340—347 DD **9 Claims**



1. Electrical apparatus for automatically converting an input number in a first form of either a BCD or binary number into an output number representing the input number and being in a second form of the remaining one of the BCD and binary number forms, each of said input and output numbers comprising at least one two-digit character, said apparatus comprising:

input circuit means for selectively storing digits of the input number and subsequent interim digits and for selectively outputting each stored digit as an odd addend;

first conversion circuit means responsive to each odd addend and to an associated odd multiplier for generating an even addend and a first lower digit together forming a character which is equal to the sum of the odd addend and the product of the odd multiplier and a preselected multiplicand;

developing circuit means selectively responsive to the first lower digit for developing the odd multiplier;

second conversion circuit means operating concurrently with said first conversion circuit means and responsive to each even addend and to an associated even multiplier for generating an interim digit and a second lower digit together forming a character which is equal to the sum of the even addend and the product of the even multiplier and the preselected multiplicand; and

output circuit means responsive to associated first and second lower digits for selectively developing the even multiplier and the output number in its second form;

each of said first and second conversion circuit means including a PROM having internal look up tables which are addressed by the combination of the associated input addend and input multiplier to develop an associated output character, said internal look up tables having a preselected multiplicand equal to ten for a BCD-to-binary

conversion and equal to sixteen for a binary-to-BCD conversion.

4,342,027

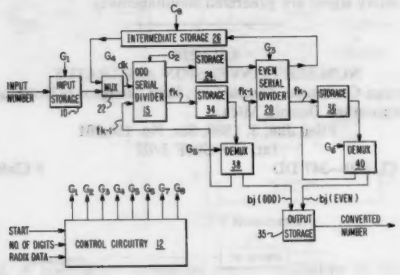
RADIX CONVERSION SYSTEM

Lawrence G. Hanson, Temple City, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 156,201, Jun. 3, 1980. This application Aug. 1, 1980, Ser. No. 174,431

Int. Cl.³ G06F 5/02

U.S. Cl. 340—347 DD **11 Claims**



1. Electrical apparatus for converting an input number in a first number system of radix r_1 into an equivalent output number in a second number system of radix r_2 comprising:

input circuit means for receiving input electrical signals representing said input number in said first number system; and

electrically operable conversion means responsive to said input electrical signals for producing output electrical signals representing said equivalent number in said second number system by performing a plurality of successive divisions in accordance with the divide-by-radix iterative equation:

$$\frac{Q_{j-1}}{r_2} = Q_j + b_j$$

where $j=1, 2, \ldots n$, where Q_0 is said input number in said first number system, where r_2 is radix r_2 expressed in said first number system, where Q_j is the quotient of the jth division, where n is the number for which the quotient $Q_j=0$, where b_j is the remainder of the jth division and is also a digit of said equivalent output number in said second number system, and where said equivalent output number in said second number system is formed by assembling the b_j remainders as $b_n \ldots b_2, b_1$ with b_1 being the least significant digit;

said conversion means including serial division circuit means for performing each of the divisions required by said divide-by-radix iterative equation using electrical signal representations for the values in said equation and the outputs obtained therefrom, said serial division circuit means including a first serial divider to which the digits of an input number Q_{j-1} are serially applied as dividend digits beginning with the most significant dividend digit, said first serial divider being responsive to these serially applied dividend digits so as to serially produce output quotient digits of the quotient Q_j in accordance with said equation beginning with the most significant output quotient digit and for also producing a final remainder digit b_j corresponding to a digit of said equivalent number in said second number system;

said serial division means also including a second serial divider connected so as to serially receive and serially operate on the output quotient digits produced by said first serial divider beginning with the most significant quotient digit.

4,342,028

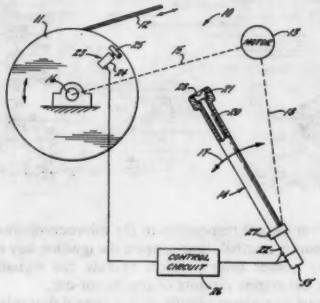
CABLE DRUM ROTATION INDICATOR

James C. Schroeder, Two Rivers, Wis., assignor to The Manitowoc Company, Inc., Manitowoc, Wis.

Filed Nov. 25, 1980, Ser. No. 210,325

Int. Cl.³ G08B 1/00

U.S. Cl. 340—407 **4 Claims**



1. For use with a power driven cable drum controlled by a hand positioned operator's lever, a drum rotation indicator comprising, in combination, an arbor mounted within and substantially coaxially with said lever, said arbor having an end exposed for physical contact with the hand of an operator using said lever, a reversible variable speed motor coupled for rotating said arbor within said lever, a power source coupled for driving said motor and positioned to be driven by said drum so that rotation of said drum causes rotation of said arbor which can be felt by the operator.

4,342,029

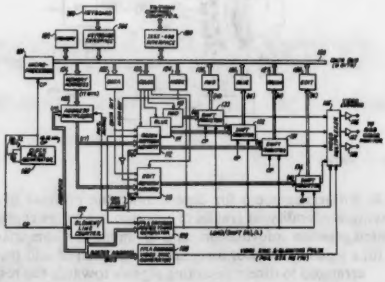
COLOR GRAPHICS DISPLAY TERMINAL

Ilmars A. Hofmanis, Commack, and Joseph A. Lebel, New Hyde Park, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jan. 31, 1979, Ser. No. 8,425

Int. Cl.³ G09G 1/28

U.S. Cl. 340—703 **23 Claims**



1. A color graphics display terminal having an edit mode of operation and a graphic mode of operation and adapted for real-time data communication with a control computer comprising:

(a) means for entering control commands and data into said terminal;

(b) means for transmitting the control commands and data from said terminal to said control computer for formulat-

ing operating instructions, said operating instructions including terminal operating instructions;

(c) means for receiving the terminal operating instructions from said control computer;

(d) means for decoding the terminal operating instructions, said decoding means including means for producing a plurality of color video signals; and

(e) means for transforming the plurality of color video signals into a multi-colored visual display.

4,342,030

ANALOGUE DISPLAYS FOR ELECTRONIC TIMEPIECES OR METERS

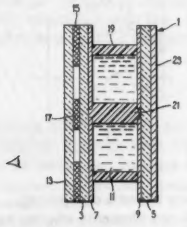
Ian A. Shanks, Malvern, England, assignor to National Research Development Corporation, London, England

Filed Mar. 7, 1980, Ser. No. 128,059

Claims priority, application United Kingdom, Mar. 13, 1979, 7908903

Int. Cl.³ G09G 3/36

U.S. Cl. 340—753 16 Claims



1. An analogue display comprising in combination:

a display panel;

address means for providing a set of voltage signals to operate the display panel; and,

selector means, capable of response to input data, for selecting voltage signals from the address means, and for applying these signals to the display panel to enable display of two indices on the display panel against an otically contrasting background; wherein, the display panel includes:

two parallel substrates;

an electrically sensitive medium contained between the two substrates, the medium being capable of adopting simultaneously in different regions thereof each of two optical states, an ON state, and an OFF state, respectively, in response to different electrical fields developed thereacross;

a first set of electrodes arranged in a plurality of segments, each segment being divided into an inner and an outer portion, each portion being planar and having a plurality of joined digits, the digits of one portion being interposed alternate with and in between the digits of the other portion, the first set of electrodes being mounted on the inwardly facing surface of the first substrate, and connected to the selector means; and

a second set of electrodes having a configuration in which a single electrode is interposed between meandering electrodes in folds formed by the meandering electrodes to form collectively a modified meander structure, the second set of electrodes being mounted on the inwardly facing surface of the second substrate, and connected to the selector means;

the two sets of electrodes being registered one set over the other with alternate digits and alternate meander electrodes defining two subsets of selectable index positions each subset to display a different index; and,

the selector means being constructed to respond to input data and connected to the two sets of electrodes to drive the panel medium in the ON state at two different selected index positions simultaneously, the panel medium being in the OFF state at all other selectable index positions.

4,342,031

LIQUID CRYSTAL AND NUMERICAL DISPLAY DEVICES

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, Harahan, La.

Filed Jan. 15, 1980, Ser. No. 112,198

The portion of the term of this patent subsequent to Mar. 18, 1992, has been disclaimed.

Int. Cl.³ G09G 3/04

U.S. Cl. 340—756 25 Claims

1. A display system producing a numerical display from a plurality of discrete electrically actuated element positions in a material exhibiting visibly changeable characteristic, with the positions placed in side-by-side relationship in a crossover grid matrix with the element positions aligned in an array forming a substantially isosceles triangle with each electrode position and two adjacent electrode positions, consisting of a set of electrode positions arranged to present a set of recognizable characters including Arabic numerical digits 0 to 9 with different subsets of said electrode positions and energization means for visually changing said elements comprising opposed electrode pairs defining each element position in said grid, the electrodes being connected in a matrix wiring pattern of separate conductors each connecting a plurality of said element electrodes together and being disposed to actuate an element at a coordinate of two conductors to define each of said discrete element positions when both conductors are energized.

4,342,032

DEVICE FOR THE DETECTION OF AND DEFENSE AGAINST MASKED HELICOPTERS

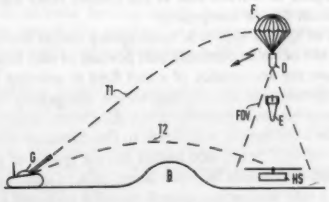
Hansjoerg Roesch, Hofstetten, and Helmut Eberle, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 21, 1980, Ser. No. 123,466

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1979, 2907249

Int. Cl.³ G01S 7/50; G01T 5/00

U.S. Cl. 343—6 ND 9 Claims



1. A system for detection of and defense against low-flying helicopters, having a drive means and rotary lifting blades operating at an angular frequency and disposed above said drive means, which are hidden by ground cover, said system comprising:

a detector for detecting thermal radiation produced by said drive means and generating an electric signal upon such detection;

a band pass optical filter disposed between said detector and said blades of said helicopter for admitting only thermal radiation to said detector having a temperature corresponding to the temperature of said drive means, said thermal radiation being modulated by periodic blocking of said thermal radiation at said angular frequency of said blades;

a means for positioning said detector above a zone in which the presence of low-flying hidden helicopters is suspected;

an amplifier post-connected to said detector for receiving said signal therefrom;

an electrical filter post-connected to said amplifier, said electrical filter admitting only signals from said amplifier having a frequency corresponding to said frequency of the blades, said optical filter and said electrical filter operating in combination for admitting only signals corresponding to the temperature of said drive means at a frequency of said blades, thereby indicating the presence of a helicopter in said zone; and

a means post-connected to said amplifier for providing a signal to a ground station indicating the presence of a detected helicopter.

4,342,033

WAVE ACTION DEVICE FOR RADIO FREQUENCIES

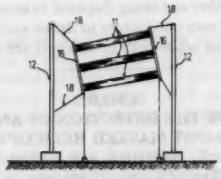
Luiz M. V. de Camargo, Rua Gomes Carneiro, 34 Apt. 901 - Ipanema, Rio de Janeiro, RJ, Brazil

Continuation-in-part of Ser. No. 837,156, Sep. 28, 1977, abandoned. This application Jan. 25, 1980, Ser. No. 115,445

Claims priority, application Brazil, Oct. 15, 1976, 17606976[U]

Int. Cl.³ H01Q *19/06*

U.S. Cl. 343—753 **6 Claims**



1. A wave action device for a wave beam emitted from a source, said wave action device operating as a lens at a relay station remote from said source of said beam to redirect the beam in selective high concentration of said beam to one or more specific points, said wave action device being positioned in the region of a wave link at the remote relay station, said wave action device comprising

a pair of spaced supports; intercepting means for intercepting the beam to eliminate that portion of said beam which forces the appearance of a null field at selected points of reception, said intercepting means comprising elongated spaced blades of predetermined dimensions positioned in a plane substantially transverse to the direction of propagation of said beam, said blades having spaces of predetermined dimensions between them, each of said blades having a side knife-edge, spaced opposite ends and a longitudinal axis extending therebetween, each of said blades having a width of a dimension determined by the operating characteristics of said device, said spaces having dimensions determined by the operating characteristics of said device;

modifying means for modifying the phase and the amplitude of the remaining portion of the intercepted beam to redirect said remaining portion of said beam in a passive manner, said modifying means selectively concentrating and diverging said remaining portion of said beam with respect to said selected points of reception, said modifying means comprising said spaces and said knife-edges of said blades for modifying the phase and the amplitude of said remaining portion of said beam; and

mounting means mounting said blades at their ends on said supports in a manner whereby said blades are adjustably inclinable relative to horizontal.

4,342,034

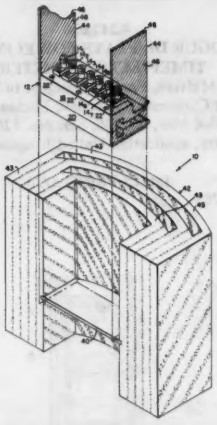
RADIO FREQUENCY ANTENNA WITH POLARIZATION CHANGER AND FILTER

George J. Monser, Goleta, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 24, 1980, Ser. No. 209,935

Int. Cl.³ H01Q *15/12*

U.S. Cl. 343—756 **8 Claims**



1. A radio frequency antenna comprising:

(a) an array of antenna elements adapted to produce radio frequency energy having linear polarization;

(b) a polarizer means disposed between a frontal portion and side portions of the array for converting the linearly polarized radio frequency energy into circularly polarized radio frequency energy;

(c) a pair of polarization filters disposed between the side portions of the array and the polarizers, such filters being disposed at an acute angle with respect to the linear polarization of the energy produced by the array.

4,342,035

FREQUENCY COMPENSATING REFLECTOR ANTENNA

Iain Anderson; Ralph Benjamin, and Thomas R. Morgan, all of Cheltenham, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Oct. 11, 1979, Ser. No. 83,917

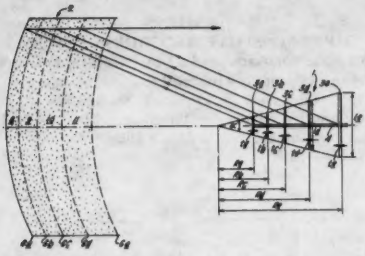
Claims priority, application United Kingdom, Jul. 33, 1979, 7925563

Int. Cl.³ H01Q *11/10*

U.S. Cl. 343—792.5 **16 Claims**

1. A reflector antenna adapted to avoid defocussing with frequency of an antenna beam being emitted or received by the antenna, said antenna comprising a reflector system, a broadband feed system for illuminating said reflector system to produce a focussed antenna beam, said feed system being operative over a continuous frequency band with the phase center of said feed system moving along an axis towards the reflector system as the frequency increases, the reflector system comprising a structure having a plurality of parts which are dimensioned respectively in relation to the different wavelengths in said frequency band of said feed system to provide a plurality of effective surfaces of reflection that are located at different depths within said structure which depths increase respectively with increasing frequency over said frequency band, whereby radiation in a given frequency region of said band is reflected at an effective surface of reflection located at a given depth within said structure while radiation of higher frequency

penetrates beyond it, said structure being dimensioned depthwise in relation to the axial movement of the phase center of said feed system so that changes in the axial position of the phase center of said feed system are matched by changes in the



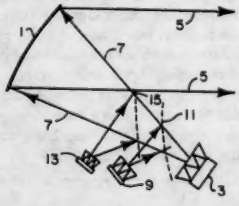
depth of the effective surface of reflection in said structure thereby to maintain the position of the focus of the reflector system substantially coincident with the position of the phase center of said feed system as the frequency changes over said frequency band.

4,342,036

MULTIPLE FREQUENCY BAND, MULTIPLE BEAM MICROWAVE ANTENNA SYSTEM

William G. Scott, Saratoga, and Howard H. Luh, Sunnyvale, both of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Dec. 29, 1980, Ser. No. 220,866
Int. Cl.³ H01Q *21/00*
U.S. Cl. 343—836 11 Claims



1. A multiple frequency band, multiple beam microwave antenna system, comprising in combination:

a reciprocal focusing means for focusing planar-front microwave energy impinging thereon to a focal region at a prime focus thereof, and for reciprocally focusing microwave energy emanating from said focal region into a propagating beam of microwave energy;

a first multiple-beam microwave feed array located within said focal region and oriented to propagate microwave energy of a first frequency toward, and receive microwave energy of said first frequency from said focusing means along a unitary, straight first axis between said feed array and said focusing means, said first feed array comprising a plurality of discrete, individually energizable microwave horns arrayed generally transverse to said first axis and oriented to propagate energy therealong;

a second multiple beam microwave feed array located between said focusing means and said first feed array, spaced from said first axis and oriented to propagate microwave energy of a second frequency toward, and receive microwave energy from, a first point on said first axis, said second feed array comprising a plurality of discrete, individually energizable microwave horns;

a first frequency selective surface located at said first point on said first axis, said frequency selective surface being transparent at said first frequency and reflective at said second frequency, and being oriented to direct microwave radiation from said second feed array along said first axis toward said focusing means;

a third multiple beam microwave feed array located between said focusing means and said first feed array, spaced from said first axis and oriented to propagate microwave energy of a third frequency toward, and receive microwave energy from a second point on said first axis intermediate said first point and said focusing means, said third feed array comprising a plurality of discrete, individually energizable microwave horns;

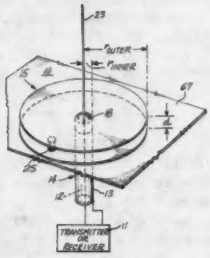
a second frequency selective surface located at said second point on said first axis, said second frequency selective surface being transparent at said first and second frequencies and reflective at said third frequency, and being oriented to direct microwave radiation from said third feed array along said first axis toward said focusing means.

4,342,037

DECOUPLING MEANS FOR MONOPOLE ANTENNAS AND THE LIKE

Thomas G. Dalby, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 22, 1980, Ser. No. 180,558
Int. Cl.³ H01Q *1/48*
U.S. Cl. 343—846 16 Claims



1. A stub antenna having means for decoupling it from surrounding electrically conductive elements comprising:

(a) an electrically conductive sheet which is not necessarily planar;

(b) a dielectric material disposed on said sheet and being contoured to minimize wind resistance;

(c) an upper conductive plate disposed on said dielectric material, said sheet, material and plate forming a radial transmission line and having a central circular aperture extending therethrough;

(d) a stub antenna having a lower portion resting on said plate and an upper portion spaced therefrom;

(e) a second dielectric material for spacing and insulating said stub antenna portions from each other; and

(f) a coaxial transmission line for feeding the antenna, said coaxial line having an inner conductor electrically connected to the upper portion of said stub antenna and an outer conductor electrically connected to the lower portion of said stub antenna.

4,342,038

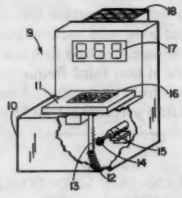
WEIGHING APPARATUS AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Jul. 11, 1980, Ser. No. 167,673
Int. Cl.³ G01D *9/00, 15/18;* G01G *23/38*
U.S. Cl. 346—9 13 Claims

1. A weighing and marking apparatus comprising in combination with a support including a platform adapted to receive

an article, means supported by said support responsive to the weight of an article disposed on said platform for generating an electrical signal which is representative of the article's weight, means for printing a plurality of indicia directly against the surface of an article disposed on said platform, control means for said printing means for varying the operation thereof to cause said printing means to vary the indicia it applies to the surface of an article, said control means being operatively connected to said means responsive to the weight of an article and operable so as to predeterminately vary the operation of said printing means while an article is disposed on said platform and means operable after said printing means has been predeterminately varied to permit said printing means to print indicia on the surface of an article located on said platform which indicia is indicative of the article's weight, said printing means including means for variably forming printing ink into the configuration of selected characters and means for moving said variably formed ink configurations from a first location away from the surface of an article disposed on said scale through space to a selected portion of said article's surface to disposed said ink in the configuration of said characters on the surface of said article.



4,342,039

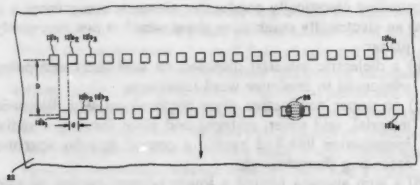
HIGH RESOLUTION MAGNETIC PRINTING HEAD

Jish M. Wang, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 69,833, Aug. 27, 1979, abandoned. This application Jan. 23, 1981, Ser. No. 227,863

Int. Cl.³ G06F *3/14*

U.S. Cl. 346—74.5 **8 Claims**



1. A magnetic printing head comprising:

(A) a first sub-assembly including;

a high magnetic permeability, insulated toothed comb;

a first support means having an elongated slot therein with electrically conductive word drive lines mounted thereon so as to cross said slot and

a second support means having an elongated slot therein with electrically conductive digit drive lines mounted thereon to cross said slot, said word and digit drive lines being substantially parallel in the vicinity of said slots and said slots in said first and second support means being aligned so that the teeth of said comb protrude through the elongated slots and so that a word and a digit drive line passes through the gaps between the teeth of the comb; and

(B) a second sub-assembly substantially the same as said first sub-assembly, said first and second sub-assemblies being fixedly positioned so that said comb structures are adjacently disposed and so that said comb teeth are aligned in parallel but with said teeth being offset so that the teeth of the comb in the first sub-assembly align opposite the gaps in the comb of the second sub-assembly.

4,342,040

HEAT SENSITIVE RECORDING SYSTEM

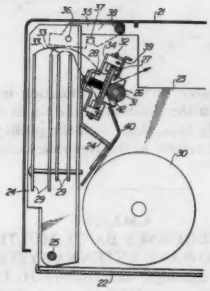
Yoshio Fujita, Yokohama, and Kiyoshi Hosoya, Fujisawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 25, 1980, Ser. No. 180,584

Claims priority, application Japan, Aug. 24, 1979, 54-107257

Int. Cl.³ G01D *15/10*; H05B *3/20*

U.S. Cl. 346—76 R **6 Claims**



4. A heat sensitive recording system comprising: a stationary housing, a shaft mounted on said housing, a roller mounted on said shaft, a heat sensitive recording head having thereon a linear heat generating element, and a head support having said recording head mounted thereon and being formed with guide grooves, said head support being mounted for movement between a first position in which said shaft is fitted into said guide grooves and said recording head is in engagement with said roller so that the generatrix of said roller is aligned with said linear heat generating element, and a second position in which said guide grooves and said recording head are disengaged from said shaft and said roller, respectively.

4,342,041

INK JET TYPE RECORDING APPARATUS

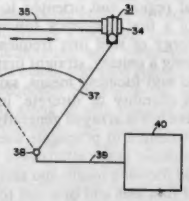
Yukio Kasugayama, Yokohama; Koji Terasawa, Fuchu, and Yoshihumi Hattori, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1980, Ser. No. 173,999

Claims priority, application Japan, Aug. 15, 1979, 54-103188

Int. Cl.³ G01D *15/16*

U.S. Cl. 346—140 R **3 Claims**



1. An ink jet type recording apparatus comprising:

a main tank for containing therein an amount of recording liquid;

a subsidiary tank disposed to receive a supply of recording liquid from said main tank through a supply line;

a recording head to which the recording liquid is supplied from said subsidiary tank through a supply pipe; and

a carriage carrying thereon said subsidiary tank and said recording head;

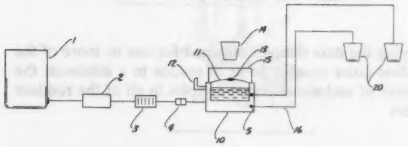
wherein said supply line is fixed at an optionally selected point and the segment of said supply line extending between said subsidiary tank and said fixed point is swing movable to describe circular arcs having a center at said fixed point in accordance with the movement of said carriage so that recording liquid is supplied to said subsidiary tank from said main tank by a pumping pressure produced in said supply line.

4,342,042

INK SUPPLY SYSTEM FOR AN ARRAY OF INK JET HEADS

Antonio S. Cruz-Uribe, Cobalt; Peter J. Lewis, Monroe, and Peter T. Miller, Norwalk, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 19, 1980, Ser. No. 218,391
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **24 Claims**



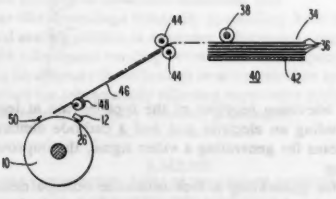
1. An ink supply system for an impulse type ink jet printer which comprises in combination a primary ink supply container for said printer, a secondary ink supply reservoir which communicates with and receives ink from said primary ink supply container, a level sensing mechanism juxtapositioned above said secondary ink supply reservoir for detecting a change in fluid level within said secondary reservoir and means for directing ink from said secondary ink supply reservoir to at least one ink jet print head of said ink jet printer.

4,342,043

SHEET FEEDING FOR A FACSIMILE SYSTEM WITH ANTI-STATIC ELECTRICITY ADDITIVE

Frank M. Palermiti, Maitland, and Ronald F. Schley, Ocoee, both of Fla., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 11, 1980, Ser. No. 120,336
Int. Cl.³ G01D *15/08*
U.S. Cl. 346—163 **10 Claims**



1. A facsimile system comprising:

scanning means;

sheet storage means;

a stack of sheets in said storage means;

each of said sheets comprising a spark-discharge medium including:

a base support;

a dark colored conductive layer on said support and

a contrasting light colored layer on said conductive layer combustible at the temperature developed during passage of marking current through each of said sheets;

sheet separating means adapted to successively contact the uppermost of said sheets in said stack as said uppermost sheets are removed from said stack, said separating means including a surface in frictional engagement with an uppermost surface of said sheet;

drive means for moving said surface in a direction substantially parallel to the sheets in said stack so as to pull each of said uppermost sheets from said stack in a direction generally parallel with the uppermost sheet in said stack, said pulling force being substantially equal on each of the uppermost sheets and sufficient to overcome the frictional force between the uppermost sheets and the sheets beneath the uppermost sheets;

each of said sheets in said stack carrying an anti-static electricity additive for substantially minimizing the electrostatic attractive force between said sheets so as to substantially equalize said pulling force required to separate the uppermost sheets from the sheets beneath regardless of atmospheric conditions; and

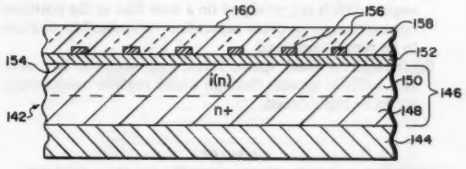
means for transporting said sheets from said storage means to said scanning means.

4,342,044

METHOD FOR OPTIMIZING PHOTORESPONSIVE AMORPHOUS ALLOYS AND DEVICES

Stanford R. Ovshinsky, Bloomfield Hills, and Masatsugu Izu, Birmingham, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 884,664, Mar. 8, 1978, Pat. No. 4,217,374, and Ser. No. 104,285, Dec. 17, 1979, abandoned, which is a division of Ser. No. 884,664, Mar. 8, 1978. This application Sep. 9, 1980, Ser. No. 185,520
Int. Cl.³ H01L *45/00*
U.S. Cl. 357—2 **26 Claims**



1. An improved photoresponsive amorphous alloy, said alloy including silicon and incorporating at least one density of states reducing element therein, said element being fluorine, said alloy having a band gap adjusting element incorporated therein without substantially increasing the states in the gap, said alloy having a band gap adjusted for a specified photoresponse wavelength threshold.

4,342,045

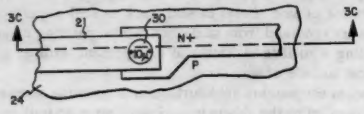
INPUT PROTECTION DEVICE FOR INTEGRATED CIRCUITS

Kyoung Kim, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 28, 1980, Ser. No. 144,472
Int. Cl.³ H01L *27/04*
U.S. Cl. 357—41 **12 Claims**

1. An input protection device for an integrated circuit on a semiconductor substrate of a first conductivity type comprising at least one metal pad on said substrate for forming external electrical connection, said metal pad being connected to a conducting region of a second conductivity type in said substrate by a metal-semiconductor alloy contact, said contact having significantly rounded edges whereby the tendency to form higher local currents through specific areas of said

contact than through the other areas of said contact is reduced to prevent the formation of a metal-semiconductor alloy pro-



trusion from said contact into said substrate upon a discharge of undesired electric charges.

4,342,046

CONTACT SCREEN FOR MAKING COLOR SEPARATION HALFTONE BLOCKS

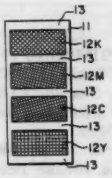
Keiichiro Kamata, Joyo, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Aug. 12, 1980, Ser. No. 177,476

Claims priority, application Japan, Aug. 21, 1979, 54-114024[U]

Int. Cl.³ H04N *1/46*

U.S. Cl. 358—75 **5 Claims**



1. A contact screen for making color separation halftone blocks, for use in a picture reproducing machine, comprising:

(a) a plurality of halftone screens having different screen angles, which are arranged on a base film in the positions corresponding to color separation reproduction pictures to be reproduced; and

(b) transparent blank spaces formed between the two adjacent halftone screens through which register mark images are to be reproduced.

4,342,047

COLOR CALIBRATION ACCURACY IN A COLOR RASTER SCANNER

Stephen E. Niemczyk, Enfield, and Richard G. Hubbard, Jr., Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 30, 1980, Ser. No. 145,096

Int. Cl.³ H04N *1/46*

U.S. Cl. 358—80 **3 Claims**

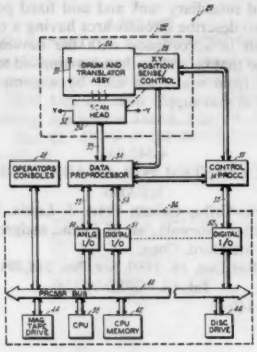
1. A method of defining, to a color identification circuit used by a color raster scanner to identify the color content of reflected images obtained by the scanner from a source chart, the resident colors of the source chart, comprising the steps of:

identifying on the source chart to be scanned, small areas which contain only one resident color and assigning a color number to each area;

positioning the sense input of the color raster scanner at two locations within each identified area and defining the source chart coordinate values for each of these two locations so as to provide to the scanner a set of coordinate values definitive of a rectangular portion within each identified area;

recording with the raster scanner a plurality of image samples located within the defined coordinates in each area so as to provide a plurality of sample images associated with each resident color number;

comparing the sample images recorded for each color number with the sample images recorded for each other color number to determine for each the number of said sample images which do not uniquely identify the resident color associated therewith, and identifying that number of samples as uncalibrated samples; and



modifying the data samples obtained for one or more of the resident color number so as to reduce to a minimum the number of said uncalibrated samples in all of the resident colors.

4,342,048

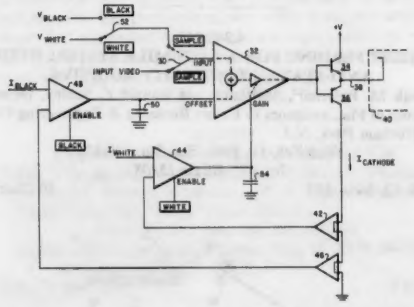
AUTOMATIC CRT TRACKING CIRCUIT

Scott L. Falater, Brookfield, and Wayne E. Bretl, Schaumburg, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Aug. 18, 1980, Ser. No. 179,368

Int. Cl.³ H04N *5/68*

U.S. Cl. 358—242 **16 Claims**



1. In a television receiver of the type having at least one CRT including an electron gun and a cathode element and having means for generating a video signal, the improvement comprising:

means for generating a first reference voltage defining a video signal level in response to which it is desired to develop a first predetermined current level in said cathode element;

means for generating a second reference voltage defining a video signal level in response to which it is desired to develop a second predetermined current level in said cathode element;

means for generating third and fourth reference signals representing said first and second predetermined current levels respectively; and

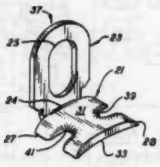
control means responsive to said first and second reference voltages and to said third and fourth reference signals for coupling said video signal to said cathode element in a form such that a current signal is produced in said cathode element equal to said first predetermined current level in response to said video signal assuming a value equal to said first reference voltage and equal to said second predetermined current level in response to said video signal assuming a value equal to said second reference voltage, whereby a desired video signal versus cathode current relationship is achieved independent of the characteristics of said CRT.

4,342,049

SUPPORTIVE MEANS FOR A CATHODE RAY TUBE

William A. Dickinson, Ottawa, Ohio, assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed May 8, 1980, Ser. No. 147,903
Int. Cl.³ H04N *5/645*
U.S. Cl. 358—246 **1 Claim**



1. Cathode ray tube support means in the form of an improved mounting bracket such as employed in a multiple spaced-apart bracket system associated with implosion-inhibiting banding means oriented as a tensioned encompassment of the forward region of the tube adjacent the viewing area thereof, said improved bracket being substantially L-shaped and formed of substantially rigid material comprising:

a seating portion having upper and lower surfaces of substantially arcuate shaping to conform to discrete perimetrical surface regions of said tube to facilitate placement between said banding and the selected surface of said tube, said seating portion having inclined side-related regions transverse to the orientation of said banding with substantially U-shaped cutout having contours related to said upper surface which are rounded and free of abrasive projections, said U-shaped cutouts formed inward through the inclined area of each side-related region in a manner to impart a mating-shaping adaptation to a section of the subsequently applied overlying banding, thereby insuring secure positional affixation of said bracket when said banding is tensioned thereover, and

an ear-like appendage integrally upstanding from an edge of said seating portion in a manner substantially parallel with said subsequent banding orientation, said appendage having an aperture therethrough to accommodate appropriate means for subsequently effecting supportive positioning of said tube in a display oriented placement.

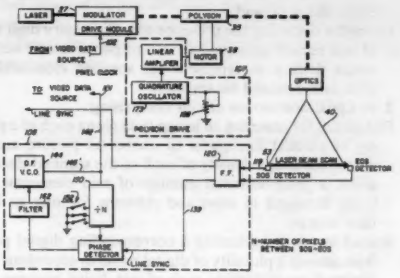
4,342,050

BEAM INTENSITY MEASUREMENT SYSTEM FOR RASTER SCANNERS

James C. Traino, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1980, Ser. No. 191,980
Int. Cl.³ H04N *1/24*; H06N *1/30*
U.S. Cl. 358—256 **13 Claims**

1. In a raster scanner having a laser providing a high intensity beam of light, means to sweep said beam across the object to be scanned, and first and second detectors to identify start of scan and end of scan positions respectively of said scanning beam as said beam sweeps across the object to be scanned, the improvement comprising:



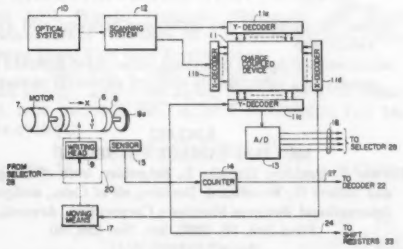
means to enable at least one of said first and second detectors to double as a light meter for use in measuring the light intensity of said scanning beam.

4,342,051

METHOD OF AND SYSTEM FOR REPRODUCING OR TRANSMITTING HALF-TONE IMAGES

Kazufumi Suzuki; Shumi Kumagai; Yuetsu Ochiai, and Akira Mizoguchi, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Apr. 24, 1980, Ser. No. 143,492
Claims priority, application Japan, Apr. 27, 1979, 54-53099
Int. Cl.³ H04N *1/04, 1/22*
U.S. Cl. 358—283 **6 Claims**



1. A signal conversion circuit comprising:

first means for scanning an image field along each of a plurality of parallel line paths of elemental picture areas to detect the image density of each of the scanned elemental areas, a predetermined number of said elemental areas being arranged in rows and columns forming an image field matrix;

second means for selecting a corresponding digital pattern from among a plurality of digital patterns according to the detected image density, each of said digital patterns being composed of a conversion dot matrix having digital values of "1"s and "0"s in a predetermined number and arrangement corresponding to the detected image density, the total number of "1"s and "0"s in said conversion dot matrix being equal to the total number of elemental areas in the corresponding image field matrix; and

third means for detecting the presence of a "1" or "0" in the selected digital pattern in a location corresponding to the location of said elemental area in said image field matrix to represent said elemental area by a "1" in a recording field in response to the detection of said "1" or by a "0" in said recording field in response to the detection of said "0", wherein said second and third means comprise:

means for generating a plurality of recurring sequences of binary digits for each said scanned line paths, said binary digits in each of the recurring sequences being shifted in their relative positions in response to the scanning of each elemental area; and

means for detecting the presence of a said binary digit in one of said recurring sequences in a response to said detected image density to represent the scanned elemental area with said detected binary digit.

2. A signal conversion circuit comprising:

first means for scanning an image field along each of a plurality of parallel line paths of elemental picture areas to detect the image density of each of the scanned elemental areas, a predetermined number of said elemental areas being arranged in rows and columns forming an image field matrix;

second means for selecting a corresponding digital pattern from among a plurality of digital patterns according to the detected image density, each of said digital patterns being composed of a conversion dot matrix having digital values of "1"s and "0"s in a predetermined number and arrangement corresponding to the detected image density, the total number of "1"s and "0"s in said conversion dot matrix being equal to the total number of elemental areas in the corresponding image field matrix; and

third means for detecting the presence of a "1" or "0" in the selected digital pattern in a location corresponding to the location of said elemental area in said image field matrix to represent said elemental area by a "1" in a recording field in response to the detection of said "1" or by a "0" in said recording field in response to the detection of said "0", further comprising:

means for detecting the average value of said detected image densities of previously scanned elemental picture areas;

means for detecting the average value of the digital values which represent said previously scanned elemental picture areas;

means for detecting the difference between said average values; and

means for adding said difference value to the detected image density of a subsequently scanned elemental picture area.

4,342,052

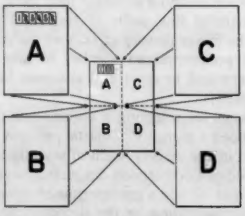
MULTIPLE IMAGE FACSIMILE

Darwin P. Rackley; Timothy L. Schneider, both of Longmont, and Milton H. Woodward, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,740

Int. Cl.³ H04N *1/38*

U.S. Cl. 358—287 **19 Claims**



1. In facsimile apparatus having a transmitting station for transmitting a scanned image and a receiving station for receiving the transmitted image, apparatus for producing multiple image print copies at the receiver comprising:

means for scanning original documents serially to produce a series of scanned images from a series of original documents;

means for reducing each scanned image in two dimensions before transmission;

means at the receiver for printing the reduced images successively; and

means for controlling said printing means to print the successive reduced images at separate locations on one copy document.

4,342,053

VIDEO SIGNAL, SPEED-CHANGE REPRODUCING SYSTEM

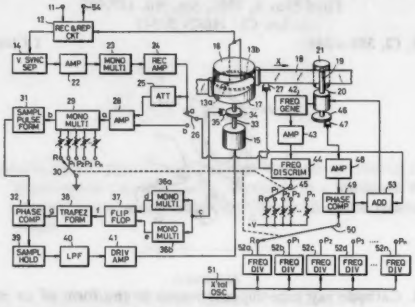
Akira Hirota, Chigasaki, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 892,147, Mar. 31, 1978, abandoned. This application Jul. 19, 1979, Ser. No. 58,818

Claims priority, application Japan, Apr. 1, 1977, 52-37081

Int. Cl.³ H04N *5/78*; G11B *15/52*

U.S. Cl. 360—10 **5 Claims**



1. A video signal, speed-change reproducing system for reproducing video signals which are recorded by a pair of rotary recording heads mounted on diametrically opposite sides of a rotating member, said heads being activated alternately to reproduce said video signals from recorded video tracks disposed contiguously and obliquely relative to the tape longitudinal direction, said recording heads having gaps of mutually different azimuth angles, said tape further having a control signal track recorded along a transverse edge, said control signals corresponding to the rotation of the recording heads, the reproducing system comprising:

driving means for transporting said tape;

a first control means for controlling said driving means to cause said tape to travel at a selected speed V represented by the equation

$$V = Vo\left(\frac{n-1}{n}\right),$$

wherein Vo is the tape speed for normal reproduction (and recording), and n is a positive or negative integer, and to cause the tape to stop;

means comprising a rotational member having a pair of reproducing heads mounted on diametrically opposite sides thereof, said reproducing heads having gaps of mutually different azimuth angles which are the same as said azimuth angles of the recording heads, said reproducing heads successively scanning said video tracks on the tape to reproduce said recorded video signal, the centers of track widths of the reproducing heads being in different height positions in said rotational planes;

a fixed head for picking up the control signal from said edge track; and

a second control means for controlling the relative phases of the rotating member and the tape travel so that said rotational phase of the rotating member is maintained in a predetermined phase relationship with respect to the

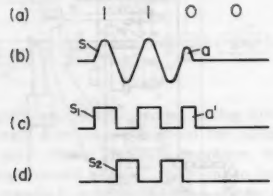
picked up control signal, said predetermined phase with respect to the picked up control signal being such that each time instant when the level of the reproduced signal becomes a minimum value is within or in the vicinity of a vertical blanking period, and the minimum level of the reproduced signal does not become zero.

4,342,054

INFORMATION READ DEVICE

Nobuo Terui, Hino, and Kozo Kobayashi, Kodaira, both of Japan, assignors to Nakamichi Corporation, Tokyo, Japan

Filed Jun. 2, 1980, Ser. No. 155,783
Claims priority, application Japan, Jun. 6, 1979, 54-76765[U]
Int. Cl.[3] G11B *5/09, 5/02*
U.S. Cl. 360—40 2 Claims



1. An information read device for reading the information of a coded AC signal wherein a bit "1" is represented by one cycle of an AC signal and a bit "0" is represented by an absence of said AC signal comprising:

a first square wave converter to generate a first square wave signal corresponding to positive components of said coded AC signal;

a second square wave converter to generate a second square wave signal corresponding to negative components of said coded AC signal; and

gate means to selectively pass one of said first and second square wave signals so that said first square wave signal is passed when said AC signal of said coded AC signal begins with a negative component while said second square wave signal is passed when said AC signal of said coded AC signal begins with a positive component.

4,342,055

AUTOMATIC REVERSE TAPE RECORDER

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

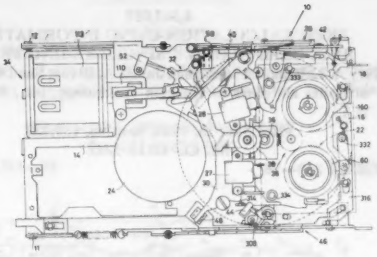
Division of Ser. No. 90,900, Nov. 5, 1979. This application Mar. 24, 1980, Ser. No. 133,260
Claims priority, application Japan, Nov. 16, 1978, 53-141616; Nov. 16, 1978, 53-141618; Nov. 16, 1978, 53-157809
Int. Cl.[3] G11B *15/18, 17/00*
U.S. Cl. 360—69 2 Claims

1. A tape recorder comprising: a single motor for moving a recording tape in forward and reverse direction, respectively,

a reel mechanism provided with a pair of reel shafts;

a motive power-transmitting mechanism provided with a pair of drive members which are respectively concentrically fitted to the pair of reel shafts so as to be rotatable relative to the respective reel shaft and supplied with motive power of the motor, respectively;

a pair of one-way clutch mechanisms, each of which is received in the respective reel mechanism, and, during rotation of the drive member fitted to the respective reel shaft in one direction, transmits the motive power of said drive member to the respective reel shaft, and during rotation of the drive member in the other direction, ceases to transmit the motive power of said drive member, the reel shafts being capable of rotating in opposite directions by means of the respective one-way clutch mechanism, means for effecting a constant rotation speed of said motor in both the forward and reverse direction, including means for detecting the actual number of rotations of the motor and means for making a comparison between a value obtained by said detection and a control target value designed to set the motor rotation at a prescribed speed, and means for minimzing the difference resulting from the comparison; and



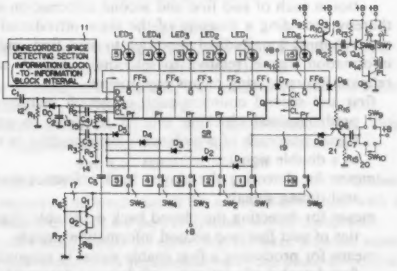
means for accelerating the rotation speed of said motor for fast forward and rewinding of the tape, including means for releasing a servo control to let the motor run at a maximum speed, whereby the motor is driven in the forward direction for the fast forward run and in the reverse direction for the rewind tape run at high speed and further in the forward direction for the reproduction and in the reverse direction for reversing the tape.

4,342,056

INFORMATION BLOCK LOCATING DEVICE

Shouichi Ishii, Warabi; Masanobu Shimanuki, and Akira Morizono, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 8, 1980, Ser. No. 119,996
Claims priority, application Japan, Feb. 14, 1979, 54-15664; Feb. 14, 1979, 54-15665; Feb. 14, 1979, 54-17496[U]; Feb. 14, 1979, 54-17497[U]
Int. Cl.[3] G11B *15/16;* G17B *27/22*
U.S. Cl. 360—72.1 6 Claims



1. In an information block locating device which responds to a substantial coincidence of an interval signal corresponding to the detection of intervals between information blocks obtained by subjecting a tape recorded with a plurality of information blocks to high-speed reproduction, with a preset value of a desired information block-number, thereby to change over the tape operation from high-speed reproduction to a normal-speed reproduction, to permit automatic location of the desired information block, the improvement comprising: a presetting section for presetting the desired information block-number, which presetting section includes a first pesetting subsection having first means for independently designating one of a

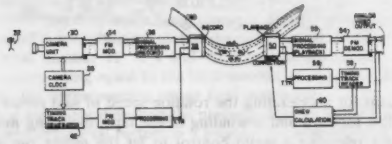
plurality of consecutive information block-numbers (1), (2), . . . (n) and a second presetting subsection having second means for designating a predetermined number (+N) to be arithmetically added to said one of said consecutive information block-numbers designated by said first presetting subsection thereby to designate one of a plurality of consecutive block numbers (1+N), (2+N), . . . (n+N).

4,342,057

SKEW CALCULATION USING INFORMATION RECORDED ALONG A SINGLE TIMING TRACK

Gary A. LaBeau, La Mesa, and James A. Bixby, San Diego, both of Calif., assignors to Eastman Technology, Inc., Rochester, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,423
Int. Cl.³ G11B *5/43*
U.S. Cl. 360—76 **4 Claims**



1. Apparatus for use in measuring the skew distortion of first and second information signals that are recorded on magnetic tape and played back from said tape through first and second channels of a multi-channel longitudinal recorder, said information signals each having a recurring detectable characteristic, said apparatus comprising:

(a) means for producing a timing signal that is recordable by said multi-channel longitudinal recorder, said timing signal having a plurality of reference markers each bearing, before the recording of said timing signal, a predetermined time relationship to a detectable characteristic in each of said first and second information signals;

(b) means for recording said timing signal on said magnetic tape and playing back said timing signal from said magnetic tape through a third channel of said multi-channel longitudinal recorder; and

(c) means for measuring, upon playback of said information and timing signals, the time relationship between the reference markers and corresponding detectable characteristics in each of said first and second information signals,

thereby providing a measure of the skew introduced by said multi-channel longitudinal recorder to said first and second information signals relative to said timing signal, said time relationship measuring means comprising:

first and second counters each of which increments at a predetermined clocking rate in response to an enable signal, and each of which stops incrementing in response to a disable signal;

means for detecting the played back reference markers of said timing signal;

means for detecting the played back detectable characteristics of said first and second information signals;

means for producing a first enable signal in response to the first detected of a reference marker or a detectable characteristic of said first information signal, and for applying said first enable signal to said first counter;

means for producing a second enable signal in response to the first detected of a reference marker or a detectable characteristic of said second information signal, and for applying said second enable signal to said second counter;

means for producing a first disable signal in response to the second detected of a reference marker or a detectable characteristic of said first information signal, and for applying said first disable signal to said first counter; and

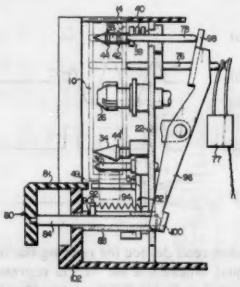
means for producing a second disable signal in response to the second detected of a reference marker or a detectable characteristic of said second timing signal, and for applying said second disable signal to said second counter.

4,342,058

APPARATUS FOR RUNNING MAGNETIC TAPES

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 139,743
Claims priority, application Japan, Apr. 20, 1979, 54-48697; Apr. 20, 1979, 54-48699; May 8, 1979, 54-60933[U]; May 8, 1979, 54-60934[U]
Int. Cl.³ G11B *15/66, 23/04*
U.S. Cl. 360—96.5 **20 Claims**



1. An apparatus for running magnetic tapes in tape cassettes, comprising:

a plurality of elongated cassette-holding means (**28, 30, 34**), each of which has a cylindrical portion and a free end portion and which hold at the cylindrical portions thereof a tape cassette (**10**) containing a roll of magnetic tape selectively in a first position and a second position, said first position being an operating position and said second position being a partially disengaged position where the cassette is retained in said apparatus but not in an operable state, said tape cassette when in said second position being closer to the free end portions of said cassette-holding means than when in said first position;

a first radially extending projection (**42**) provided on the cylindrical portion of at least one (**28**) of said cassette-holding means for engaging the tape cassette (**10**) when it is in said first position for preventing the tape cassette (**10**) from moving between said first position and said second position;

a second radially extending projection (**44, 44'**) provided on the cylindrical portion of each of said cassette-holding means (**28, 30, 34**) for engaging the tape cassette (**10**) when it is in said second position for preventing the tape cassette (**10**) from being released from said cassette-holding means;

said first and second projections on said at least one cassette-holding means (**28**) being axially spaced from each other along the length of said at least one cassette-holding means (**28**);

a tape-running mechanism which has a tape-running mode for running the magnetic tape when the tape cassette is placed in said first position and a tape-stop mode for stopping the magnetic tape; and

a switching mechanism responsive to the position of said tape cassette for setting the tape-running mechanism to the tape-running mode by the tape cassette when the tape cassette moves from the second position to the first position and to the tape-stop mode by the tape cassette when the tape cassette moves from the first position to the second position.

4,342,059

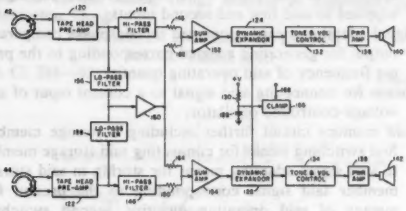
ELECTRONIC GAIN AND NOISE CONTROL FOR RECORDING OF ANALOG INFORMATION

William R. Wray, Sudbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 32,942, Apr. 24, 1979, Pat. No. 4,271,439. This application Jul. 29, 1981, Ser. No. 287,880

Int. Cl.³ G11B 5/20, 5/02

U.S. Cl. 360—123 4 Claims



1. In magnetic recording apparatus having first and second record/playback transducers disposed for substantially like pick-up of noise during playback operation, the apparatus further having a record section for applying to the transducers information signals to be recorded and a playback section for receiving from the transducers information signals read from a magnetic recording medium, the apparatus having an improvement for controlling noise introduced during playback operation, comprising:

means for connecting the first and second transducers for recording information signals from the record section in phase opposition relative to each other and for playing back information signals to the playback section in phase opposition relative to each other, and

means for summing playback signals from the first and second transducers and for applying the resultant summation signal for processing in the playback section,

whereby the transducers record information signals with a phase reversal relative to one another and play back information signals with like relative phase reversal, and the transducers pick up noise signals during the playback operation with relative opposite phase such that the noise signals at least in part cancel upon summing.

4,342,060

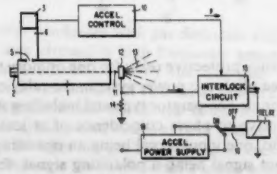
ENERGY INTERLOCK SYSTEM FOR A LINEAR ACCELERATOR

Robert Gibson, Walnut Creek, Calif., assignor to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.

Filed May 22, 1980, Ser. No. 152,484

Int. Cl.³ H05G 1/46

U.S. Cl. 361—1 10 Claims



1. An energy monitoring system for supervision of a particle accelerator, which emits particle beam pulses, comprising in combination;

(a) means for measuring the level of the particle beam pulses, said means including a target which is exposed to said particle beam pulses for deriving a signal responsive to said particle beam pulses;

(b) discriminator means connected to said measuring means for determining if the level of said particle beam pulses has crossed a predetermined value; and

(c) switch means operated by said descriminator means and connected to said particle accelerator for interlocking the operation of said accelerator.

4,342,061

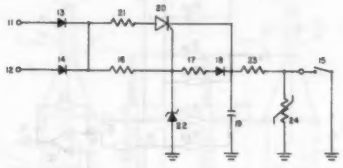
VOLTAGE REDUCTION SAFETY CIRCUIT

Darrell Rice, Tulsa, and Bill E. Baker, Bixby, both of Okla., assignors to Frank W. Murphy Manufacturer, Inc., Tulsa, Okla.

Filed Mar. 4, 1981, Ser. No. 240,319

Int. Cl.³ H02H 9/00

U.S. Cl. 361—58 7 Claims



1. A voltage reduction safety circuit, comprising:

a voltage input means;

a voltage divider network including first and second parallel branches coupled to said voltage input means;

a storage capacitor electrically connected to the output of said first and second parallel branches;

an SCR in series in said first parallel branch, said SCR including a gate electrode electrically connected to said second parallel branch;

a gating resistor and diode connected in series in said second parallel branch and electrically positioned between said SCR gate electrode and said storage capacitor;

a zener diode electrically connected to said SCR gate electrode for providing a reference voltage level to which said storage capacitor may charge; and

an output circuit means electrically connected to said storage capacitor and said first and second parallel branches.

4,342,062

SEQUENCE NETWORK CIRCUITS FOR PROTECTIVE RELAYING APPLICATIONS

Merwyn E. Hodges, Springfield, Pa., assignor to General Electric Company, Philadelphia, Pa.

Continuation of Ser. No. 41,137, May 21, 1979, abandoned. This application Aug. 31, 1981, Ser. No. 297,542

Int. Cl.³ H02H 3/34, 3/26

U.S. Cl. 361—76 23 Claims

1. A sequence network circuit for use in combination with a three-phase (X, Y, Z) a-c power system, which comprises:

(a) input circuit means for receiving: (1) three separate input signals respectively representative of the phase-to-neutral voltage in the three phases (X, Y, Z) and a fourth input signal representative of the negative of the zero sequence voltage therein, said input signals having a common reference potential; or, (2) three separate input signals respectively representative of the line current in the three phases (X, Y, Z) and a fourth input signal representative of the negative of the zero sequence current in the system, said input signals having a common reference potential;

(b) signal processing means receiving said input signals and comprising:

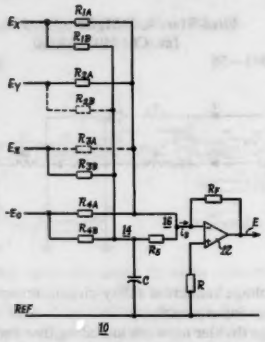
(1) an operational amplifier having a non-inverting input adapted to be coupled to the reference potential and an

inverting input coupled to its output through a feedback resistor R_F,

(2) a capacitor C, one side of which is adapted to be coupled to the reference potential and the other side of which is coupled to a junction **14**,

(3) a resistor R_5 coupled between the junction **14** and the inverting input of the operational amplifier with a summing point **16** being provided between resistor R_5 and the inverting input,

(4) a resistor R_{1A} coupling a first one of the three input signals to summing point **16** and a resistor R_{1B} coupling said first input signal to junction **14** independently of said resistor R_{1A}, said first input signal comprising a reference input signal E_X,



(5) a resistor R_{2A} coupling a second one of the three input signals to summing point **16** independently of junction **14**,

(6) a resistor R_{3B} coupling a third one of the three input signals to junction **14**,

(7) a resistor R_{4A} coupling the fourth input signal to summing point **16** and a resistor R_{4B} coupling the fourth input signal to junction **14**,

wherein the values of the components in the circuit are selected such that the output signal E of the operational amplifier is representative of $(E_{X1}\text{-}E_{X2})\ \angle -180°$, where E_{X1} is the positive sequence component of the reference input signal E_X, E_{X2} is the negative sequence component of the reference input signal E_X, and $\angle -180°$ represents a 180 degree lagging relationship with respect to E_X.

4,342,063

MEMORY CIRCUIT IN A RELAY PROTECTION DEVICE

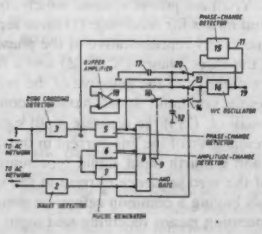
Lennart Thörnell, Västeros, Sweden, assignor to ASEA Aktiebolag, Västeros, Sweden

Filed Sep. 5, 1980, Ser. No. 184,543

Claims priority, application Sweden, Sep. 7, 1979, 7907436

Int. Cl.³ H02H *3/38, 3/24*

U.S. Cl. 361—79 **8 Claims**



1. A relay protection device for supplying a periodic output signal, the frequency and phase position of which correspond to the frequency and phase position of an input signal from an a.c. network, comprising:

a memory circuit including a phase-locked loop with a voltage-controlled oscillator and a phase comparator;

means for supplying an input signal from an a.c. network to a first input of said phase comparator, said input signal corresponding to an operating quantity of said network;

the output signal from said oscillator being connected to a second input of said phase comparator;

said phase comparator generating an output signal corresponding to the phase difference between the signals supplied to said first and second inputs;

signal adapting means connected to said phase comparator output for generating a signal corresponding to the present frequency of said operating quantity;

means for connecting said signal to a control input of said voltage-controlled oscillator;

said memory circuit further including a storage member, first switching means for connecting said storage member to said signal adapting means for storing in said storage member said signal corresponding to the present frequency of said operating quantity, second switching means for connecting, upon a fault in said network, said storage member to said control input of said voltage-controlled oscillator;

control means for periodically closing said first switching means to update the signal stored in said storage member, said control means including a fault detector for generating an output signal upon a fault in said network;

a phase-change detector for generating an output signal upon a change in the phase position of said operating quantity; and

logical means connected to receive the output signals of said fault and phase-change detectors for preventing the closing of said first switching means when either one or both of said fault and phase-change detectors generate an output signal.

4,342,064

STATIC DISTANCE RELAYS WITH IMPROVED POLARIZING SIGNAL

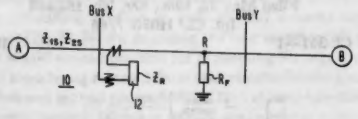
Stanley B. Wilkinson, Havertown, Pa., assignor to General Electric Company, Philadelphia, Pa.

Continuation of Ser. No. 32,303, Apr. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 879,635, Feb. 21, 1978, Pat. No. 4,161,011. This application Mar. 6, 1981, Ser. No. 241,318

The portion of the term of this patent subsequent to Jul. 10, 1996, has been disclaimed.

Int. Cl.³ H02H *3/26, 7/26*

U.S. Cl. 361—80 **8 Claims**



1. In a distance protective relay for one or more transmission lines in a three phase a-c power system, the relay circuit being of the phase angle comparator type and including AND circuit means responsive to phase coincidence of at least two input signals thereto, one input signal being an operating signal and a second input signal being a polarizing signal, the operating signal being related to the sum of (1) the product of transmission line current and a replica impedance of the transmission line and (2) transmission line voltage, the polarizing signal being related to transmission line voltage, TIMER circuit means responsive to an output signal of the AND circuit means for producing a TIMER output signal when the phase coinci-

dence of the input signals is of a predetermined duration, wherein the improvement comprises:

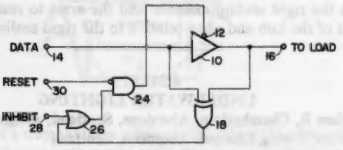
said polarizing signal being related to the sum of (1) a faulted transmission line voltage and (2) the product of a predetermined constant and the positive sequence component of said faulted transmission line voltage.

4,342,065

PROTECTION CIRCUIT FOR A DATA DRIVER

Robin R. Larson, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 10, 1981, Ser. No. 252,985
Int. Cl.³ H02H *9/00*
U.S. Cl. 361—93 **7 Claims**



1. A protection circuit, comprising:

an inhibitable data driver for generating an output logic signal in response to an input logic signal when said data driver is enabled; and

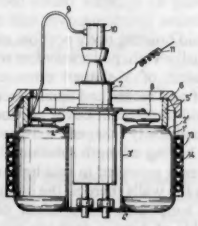
a logic comparator circuit comprising a single logic gate for comparing said input and output logic signals of said data driver and inhibiting said data driver in response to the comparison result.

4,342,066

ELECTRICAL CONDENSER WITH A DIELECTRIC OF GAS UNDER PRESSURE

Klaus Külper, Almhagsvägen 17, 170 10 Ekerö, Sweden

Filed May 14, 1979, Ser. No. 38,569
Claims priority, application Sweden, May 16, 1978, 7805611
Int. Cl.³ H01G *5/02*
U.S. Cl. 361—278 **4 Claims**



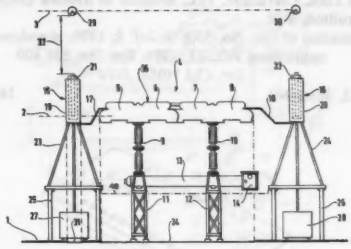
1. A high power condenser with gas dielectric and intended preferably for tank circuits in high frequency generators and radio transmitters, characterized by the fact that: the electrodes of the condenser consist of two metal tubes (1', 2') with different diameters, located one in the other to provide an annular air gap therebetween; means at both ends of said tubes providing that said tubes are gas tight sealed to each other so that the air gap between the tubes forms a space which can be filled with compressed gas, while the space along the centre axis of the tubes remains open and is accessible for a transmitter tube to be located therein; an end of each of said metal tubes is made with an annular pot shape and said tubes are telescopically related in a relatively inverted disposition; and said means providing gas tight sealing includes a cylindrical tube, concentrically inward of said metal tubes and secured to said metal tubes to maintain tubular portions of said metal tubes in radially spaced disposition.

4,342,067

ELECTRIC POWER SUBSTATION FOR USE AT VERY HIGH VOLTAGES

Edmond Thuries, Meyzieu, and Jean-Paul Masson, Villeurbanne, both of France, assignors to Societe Anonyme dite: Delle-Alsthom, Villeurbanne, France

Filed Feb. 5, 1980, Ser. No. 118,718
Claims priority, application France, Feb. 7, 1979, 79 03079
Int. Cl.³ H02B *1/04*
U.S. Cl. 361—333 **10 Claims**



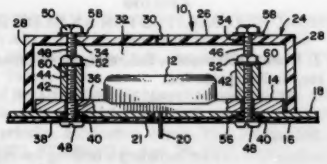
1. An electric power substation for use at very high voltages of 245 kilovolts and above, comprising at least one circuit-breaker, and at least one conductive busbar, and wherein said circuit-breaker is connected to a conductive busbar by at least one isolating switch whose axis is vertical, the improvement wherein a vertical geometric projection on a horizontal floor plane of the substation of an alive cover of the isolating switch connectable to the very high voltage is within a circle whose diameter is less than thirty percent of an opening distance of the isolating switch and which does not intersect a vertical geometric projection of the circuit-breaker onto a horizontal floor plane of the substation, the isolating switch being for the most part of its axis located above the circuit-breaker so as to provide a region wherein access to the circuit-breaker is protected against the effects of the very high voltage.

4,342,068

MOUNTING ASSEMBLY FOR SEMICONDUCTOR DEVICES AND PARTICULARLY POWER TRANSISTORS

Jarrett B. Kling, Rochester, N.Y., assignor to Teknational Industries Inc., Rochester, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,366
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—386 **10 Claims**



1. A mounting assembly with a semiconductor device upon a circuit board on which a conductive heat dissipating member is disposed, said device having a flange, said mounting assembly comprising a cover having a top wall and side walls defining an opening higher than said device and larger than said flange in which said device is received, said device being disposed with said flange upon said heat dissipating member and spaced from said circuit board by said heat dissipating

member, a hole in said flange and holes in said top wall, said member and said board all in alignment with each other, a spacer having a hole, said spacer being disposed upon said flange and between said top wall and said flange with said spacer hole aligned with said holes in said top wall, said flange, said member and said board, and threaded fastener means associated with said spacer and extending through said aligned holes and into said spacer for independently clamping (a) said heat dissipating member and said flange between said spacer and said board and (b) said cover upon said member.

4,342,069

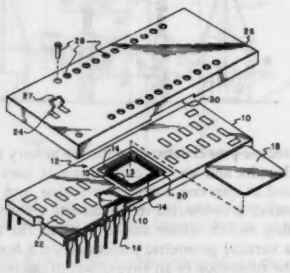
INTEGRATED CIRCUIT PACKAGE

Joseph Link, Carrollton, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Continuation of Ser. No. 53,879, Jul. 2, 1979, abandoned. This application Feb. 13, 1981, Ser. No. 234,400

Int. Cl.³ H05K *1/14*

U.S. Cl. 361—401 **14 Claims**



1. A unitized integrated circuit package for actively interconnecting an integrated circuit to an active circuit comprising:

(a) a supporting package having a top and bottom,

(b) a die cavity in the package,

(c) bonding finger pads for connecting an integrated circuit die,

(d) a die cavity lid for sealing the integrated circuit die,

(e) external lead pins extending from the package bottom in a first pattern and interconnected with the bonding finger pads, and

(f) socket contacts spaced in the supporting package top in a second pattern and interconnected with the bonding finger pads to receive an integrated circuit package to provide a functionally active interconnection between the integrated circuit die and the integrated circuit package.

4,342,070

ANCHORING APPARATUS FOR AN ELECTRICAL DEVICE

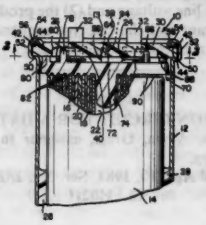
William J. Evans, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Mar. 18, 1980, Ser. No. 131,437

Int. Cl.³ H01G *9/06*

U.S. Cl. 361—433 **7 Claims**

1. In an electrical device including a housing having an open end for receiving an electrical component and a rigid member for sealing the open end to contain the electrical component within the housing, the improvement comprising: means positioned between the electrical component and the rigid sealing member for anchoring the electrical component within the housing; the anchoring means including a hub, at least two angularly spaced arms extending radially outward from the hub, a plurality of fingers extending axially outward from each of said angularly spaced arms and engaging said electrical component, means extending axially outward from the hub for engaging the electrical component; and means for engaging



both the rigid sealing member and the arms to restrict movement of the hub and arms relative to the rigid sealing member.

4,342,071

UNDERWATER LIGHTING

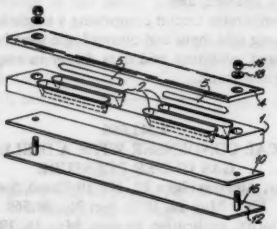
William B. Chamberlain, Aberdeen, Scotland, assignor to Challenger Diving Limited, Aberdeen, Scotland

Continuation of Ser. No. 956,967, Nov. 2, 1978, abandoned. This application Aug. 11, 1980, Ser. No. 177,132

Claims priority, application United Kingdom, Nov. 8, 1977, 46528/77

Int. Cl.³ F21V *31/00*

U.S. Cl. 362—158 **12 Claims**



1. An undersea lamp comprising, in combination, a housing body portion having an elongate recess therein, a translucent housing cover portion extending over said recess and permanently sealed to said housing body portion, said elongate recess having a substantially V-shaped transverse section, an elongate light-reflective insert of V-shaped cross-section and length similar to those of said recess and firmly secured in said recess and opening to said translucent cover portion, and an elongate substantially cylindrically shaped self-energising radiation-type light source having a length substantially equal to that of the recess and fixedly mounted in said light-reflective insert in spaced relation to the walls thereof, the combination providing a self-contained lamp unit independent of external power sources and capable of duty in deep sea conditions.

4,342,072

LIGHTING FIXTURE

Kenneth E. Guritz, 570 Emerald Harbor Dr., Longboat Key, Fla. 33548, and Michael L. Guritz, 6904 Manatee Ave., W., Bradenton, Fla. 33508

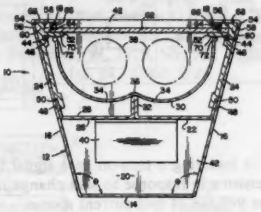
Filed Jun. 5, 1980, Ser. No. 156,674

Int. Cl.³ F21V *19/04*

U.S. Cl. 362—222 **4 Claims**

1. A lighting fixture comprising a housing including a substantially planar housing base plate having side walls extending upwardly from said substantially planar housing base plate and terminating in a pair of inwardly projecting uppermost ends to cooperatively form an elongated cavity, a pair of supporting members disposed on the upper portion of said upperwardly

projecting side walls each comprising a detent formed on the lower portion therefrom and a shelf extending inwardly formed on the upper portion thereof in spaced relation relative to said respective inwardly projecting uppermost ends, a substantially transparent material operatively supported on said oppositely disposed shelves, said supporting members further include an open channel threaded portion formed below said oppositely disposed shelves to partially receive a fastening member to affix a pair of end plates to opposite ends of said



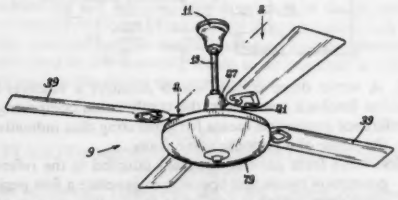
housing, and a tray having a substantially planar tray base plate and upwardly projecting side walls to cooperatively press fit slidingly within said detents, circuitry disposed on the lower surface of said substantially planar tray base plate and reflective shield and light source supported on the upper surface of said substantially planar tray base plate, the uppermost portions on opposite sides of said reflection shield disposed to engage said oppositely disposed shelves to press fit said reflective means between said tray and said oppositely disposed shelves.

4,342,073

CEILING FAN WITH ILLUMINATION MEANS

Richard Ranten, Mitcham, Australia, assignor to Mistral Incorporated, Anaheim, Calif.

Filed May 22, 1980, Ser. No. 152,487
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—294 **12 Claims**



1. A ceiling fan with illumination means comprising:

a motor to be supported from a ceiling, said motor having a central stator and a rotor disposed radially outwardly of the stator, the dimension of said motor in the radial direction being substantially greater than the dimension thereof in the axial direction;

a stationary shaft extending coaxially through the stator in the vertical direction and providing support for said stator;

a rotor housing mounted for rotation on said shaft at locations thereon spaced axially above and below said stator, said housing being attached to said rotor for rotation thereby on the vertical axis;

a plurality of axial flow blades mounted on and extending radially outwardly from said housing, each blade having its longitudinal dimension substantially greater than its transverse dimension;

stationary illumination means; and

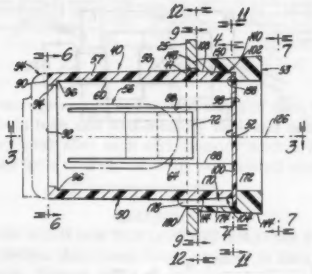
means mounting said stationary illumination means in radial alignment with said motor and spaced radially outwardly of and adjacent said rotor housing.

4,342,074

LAMP HOUSING

Dale L. Bull, and Norman A. Rautiola, both of Reed City, Mich., assignors to Nartron Corporation, Reed City, Mich., a part interest

Filed Sep. 7, 1978, Ser. No. 940,268
Int. Cl.² F21S *1/06, 17/06*
U.S. Cl. 362—365 **34 Claims**



1. A lamp housing assembly for detachably supporting an associated bulb socket assembly and containing at least a portion of a bulb operatively connected to and carried by said associated bulb socket assembly, said lamp housing assembly comprising generally tubular housing body means comprised of plastic material, deflectable means integrally formed with and carried by said housing body means for detachably securing said housing body means within aperture means of associated support structure, said housing body means comprising first and second opposite ends, a first opening formed in said first end and a second opening formed in said second end, passage means formed through said housing body means and interconnecting said first and second openings, said first opening being effective for detachably receiving therein a portion of said associated bulb socket assembly, said passage means being effective to receive at least a portion of said bulb carried by said associated bulb socket assembly, lens means situated in juxtaposed relationship to said second opening of said housing body means, said housing body means further comprising an enlarged body portion at least near said second end, and lens retainer means, said lens retainer means being juxtaposed to said lens as to contain said lens between said retainer means and said second end of said housing body means, said retainer means slidably receiving said enlarged body portion and being secured thereto.

4,342,075

SWITCHED MODE DC TO DC CONVERTER USING VARIABLE LEAKAGE TRANSFORMER

Hirayama Hiromitsu, Funabashi, Japan, assignor to TDK Electronics, Tokyo, Japan

Division of Ser. No. 884,953, Mar. 9, 1978, Pat. No. 4,213,084. This application Mar. 26, 1980, Ser. No. 134,113
Claims priority, application Japan, May 20, 1977, 52/57749; May 26, 1977, 52/66946[U]; Jun. 30, 1977, 52/85426[U]
The portion of the term of this patent subsequent to Jul. 15, 1997, has been disclaimed.
Int. Cl.³ H02P *13/22*
U.S. Cl. 363—23 **3 Claims**

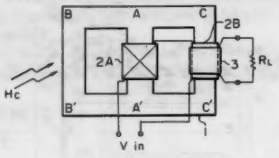
1. A switched mode power supply circuit, comprising:

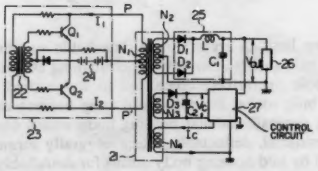
(A) A switching means connected to a direct current power supply terminal to switch said direct current power to provide a rectangular waveform output;

(B) A variable leakage transformer having a primary wind-

ing for receiving said rectangular waveform output of said switching means to provide a controlled rectangular waveform output voltage across a secondary winding thereof, said variable leakage transformer comprising a core with a closed main magnetic path and a closed sub-magnetic path, the main magnetic path having at least a common path with the sub-magnetic path;

said primary winding having a first primary winding protion and a second primary winding portion connected in a series with each other, the first primary winding portion being wound on the common magnetic path, the second primary winding portion being closely coupled magnetically with the secondary winding,





said secondary winding being wound on the main magnetic path of the core, and a control winding wound on the sub-magnetic path for controlling the magnetic flux in the sub-magnetic path to control the pulse width of the output voltage of said secondary winding;

(C) Rectifying means connected to the output of said secondary winding for providing a stabilized DC voltage; and

(D) Control means for adjusting the direct current in said control winding to provide a desired stabilized output voltage from said rectifying means.

4,342,076

TRANSISTOR TURN OFF CURRENT SENSING CIRCUIT

Mark A. Rosswurm, Ada, and Joseph M. Urish, Shawnee Township, Allen County, both of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 12, 1981, Ser. No. 233,722

Int. Cl.³ H02M 7/537

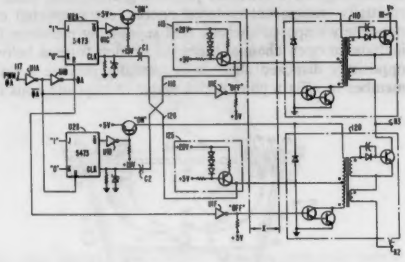
U.S. Cl. 363—56 **5 Claims**

1. Power transistor circuitry with current sensing comprising:

a first output transistor connected to control conduction between an input terminal and an output terminal;

means for selective application and removal of base drive current to said output transistor, said means comprising a current controlled feedback transformer, said current controlled feedback transformer having a secondary winding with a tap connected to a current source;

means for monitoring the voltage of said secondary winding as an indication of the current conducted by said output transistor, said voltage exhibiting a change from a first low level to a second higher level upon the completion of the turn-off period of said output transistor;



and means for initiating a turn-on base signal for a second output transistor in response to said change in voltage of said output voltage of said current source.

4,342,077

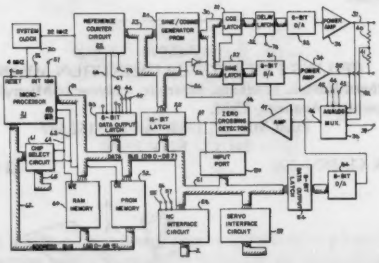
NUMERICAL CONTROL SERVO DRIVE CIRCUIT

Douglas A. Passey, Cleveland Heights, and Ronald E. Jerva, Mentor On The Lake, both of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Jul. 17, 1980, Ser. No. 169,814

Int. Cl.³ G05B 19/18

U.S. Cl. 364—183 **9 Claims**



1. A servo drive circuit which employs a resolver-type position feedback transducer, the combination comprising:

reference generation means for generating data indicative of the phase of a periodic wave form;

first wave form generation means coupled to the reference generation means and operable to generate a first periodic wave form which is applied to the resolver-type position feedback transducer which has a first preselected phase relationship with said generated data;

second wave form generation means coupled to the reference generation means and operable to generate a second periodic wave form which is applied to the resolver-type position feedback transducer which has a second preselected phase relationship with said generated data;

phase detection means coupled to one of said wave form generation means and being operable to generate data indicative of the phase of said one periodic wave form;

phase altering means coupled to one of said wave form generation means for altering the phase of its generated periodic wave form in response to phase correction data; and

processor means coupled to said phase detection means to receive its generated data, coupled to said reference generation means to receive its generated data, and coupled to generate phase correction data to said phase altering means, said processor means being operable to periodically measure the phase of one of said periodic wave

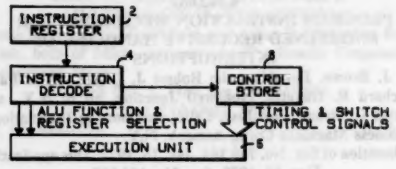
forms and determine its phase relationship with respect to said reference generation means data, and being operable to generate correction data to said phase altering means for maintaining a preselected phase relationship between said first and second periodic wave forms.

4,342,078

INSTRUCTION REGISTER SEQUENCE DECODER FOR MICROPROGRAMMED DATA PROCESSOR AND METHOD

Harry L. Tredennick, and Thomas G. Gunter, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 21, 1979, Ser. No. 41,202
Int. Cl.³ G06F *9/26*
U.S. Cl. 364—200 **11 Claims**



1. A data processor using microprogrammed control to execute a plurality of macroinstructions, the data processor comprising:

a. first means for storing a macroinstruction;

b. control means for storing a plurality of microinstruction routines, each of the microinstruction routines including one or more microinstructions for controlling operations performed by the data processor, and each of the microinstruction routines being associated with a corresponding starting address; and

c. decoding means coupled to the first means and to the control means, the decoding means being responsive to a field of the macroinstruction stored by the first means for providing simultaneously a plurality of possible starting addresses associated with the execution of the stored macroinstruction, said decoding means being effective to selectively and sequentially present each of the plurality of starting addresses to the control means to cause each of the microinstruction routines associated with addresses provided by the decoding means to be executed in order to execute the stored macroinstruction.

4,342,079

DUPLICATED MEMORY SYSTEM HAVING STATUS INDICATION

Charles G. Stewart, Hazeldean, and Prem L. Sood, Richmond, both of Canada, assignors to Northern Telecom Limited, Montreal, Quebec, Canada

Filed Jun. 6, 1979, Ser. No. 46,101
Claims priority, application Canada, May 15, 1979, 327649
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **14 Claims**

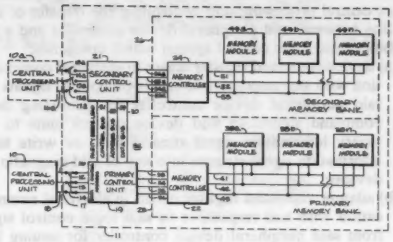
1. A duplicated memory system for use with a central processing unit (CPU) wherein said memory system comprises:

first and second memory banks, each memory bank system comprising a plurality of memory modules for storing a plurality of binary words in distinct addressable storage locations, with a unique address code defining both one distinct addressable storage location in a memory module in said first memory bank and one distinct addressable storage location in a memory module in said second memory bank;

status storage means, for storing an indication of the read status of each memory module in both said first and second memory banks;

control means, responsive both to said CPU and to said status storage means, for selectively accessing the distinct addressable storage locations in said first and second memory banks; and

said control means updating the indication, stored in said



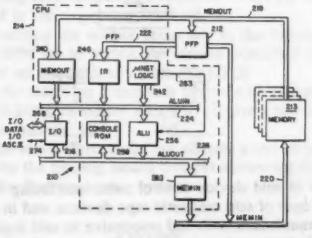
status storage means, of the read status of each memory module in both said first memory bank and said second memory bank after each said memory module has been accessed for a read operation by said control means.

4,342,080

COMPUTER WITH MICROCODE GENERATOR SYSTEM

David Grondalski, Hopkinton, Mass., assignor to Data General Corporation, Woburn, Mass.

Continuation-in-part of Ser. No. 959,038, Nov. 8, 1978, Pat. No. 4,316,244. This application Nov. 5, 1979, Ser. No. 91,347
Int. Cl.³ G06F *9/22*
U.S. Cl. 364—200 **4 Claims**



1. A computer system comprising a main memory, means for providing an LDA macrocode instruction, and a CPU having a plurality of accumulators and microinstruction logic for generating a microcode control word for causing the transfer of a word in main memory to an accumulator of the CPU, said microinstruction logic generating one of a plurality of address words from portions of said LDA macrocode instructions, said logic having a microcode control word generator comprising a plurality of banks of control memories, and said logic having means for applying portions of the bits of said address words to the input of said banks of said memories and said logic having means responsive to at least one bit of said generated address words for selectively enabling one bank of said plurality of banks of said memories to produce a microcode control word.

4,342,081

TAPE DEVICE ADAPTER

Joseph J. Dubuc, Yukon, Okla., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 12, 1979, Ser. No. 102,712
Int. Cl.³ G06F *13/00, 3/00, 5/00*
U.S. Cl. 364—200 **3 Claims**

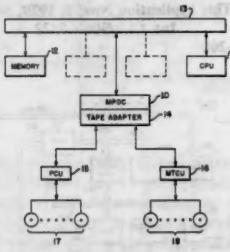
3. A logic control system in a tape device adapter having an input and an output intercoupled by logic paths for accommodating a transfer of binary information signal streams between

plural magnetic tape device control units providing logic control signals and controlling the operation of plural magnetic tape devices, and a peripheral device controller providing logic control signals and in electrical communication with a common communication bus of a data processing system having a central processing unit controlling the transfer of information between said peripheral device controller and a main memory, said logic control system which comprises:

(a) device command register means in electrical communication with and responsive to said logic control signals from said peripheral device controller for providing device command signals to said device control units to read binary information signal streams from or write binary information signal streams into any of said magnetic tape devices;

(b) adapter command register means in electrical communication with and responsive to said logic control signals from said peripheral device controller for issuing logic command signals identifying the source of said binary information signal streams received by said logic control system, and selecting ones of said logic paths for said binary information signal streams in transit for providing adapter command signals for effecting singularly or in any combination a data pack, a data depack and a code conversion of said binary information signal streams in the logic paths thus selected;

(c) multiplexer register means in electrical communication with and responsive to said logic control signals from



those of said device control units interfacing with read only ones of said magnetic tape devices, and in electrical communication with and responsive to said logic control signals from said peripheral device controller for accommodating a transfer of said binary information signal streams read from said read only ones into said tape device adapter;

(d) first tri-state multiplexer means responsive to said logic command signals issued by said adapter command register means and in electrical communication with said multiplexer register means and those of said device control units interfacing with read-write ones of said magnetic tape devices for directing said binary information signal streams to selected ones of said logic paths;

(e) shift register control means responsive to said adapter command signals issued by said adapter command register means, said logic control signals from said peripheral device controller and said logic control signals from said device control units providing shift register control signals for controlling the rate of flow of said binary information signal streams through said logic paths during a data packing, a data depacking, a code conversion, and a reading of data from said magnetic tape devices;

(f) logic data packing means responsive to said shift register control signals received from said shift register control means, said adapter command signals issued by said adapter command register means and said logic control signals from said peripheral device controller for effecting a packing or depacking of binary information streams;

(g) code conversion means in electrical communication with said logic data packing means and said peripheral device controller, and said logic responsive to said command logic signals issued by said adapter command register means and said logic control signals from said peripheral device controller for converting said binary information signal streams from a first data processor code to a second data processor code in accordance with a selectable conversion code; and

(h) second tri-state multiplexer means in electrical communication with said logic data packing means and said code conversion means, and responsive to said logic control signals received from said peripheral device controller and said logic command signals issued by said adapter command register means for supplying said binary information signal streams to said peripheral device controller.

4,342,082

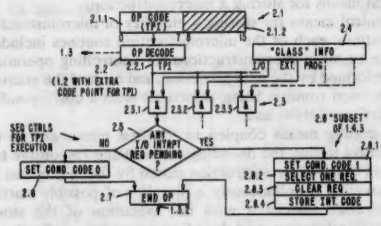
PROGRAM INSTRUCTION MECHANISM FOR SHORTENED RECURSIVE HANDLING OF INTERRUPTIONS

Paul J. Brown, Poughkeepsie; Robert J. Dugan, Hyde Park; Richard R. Guyette, Hopewell Junction, all of N.Y., and David L. Strong, San Jose, Calif., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 759,164, Jan. 13, 1977. This application Dec. 18, 1979, Ser. No. 104,930

Int. Cl.³ G06F 9/46, 9/00

U.S. Cl. 364—200 **3 Claims**



1. In a data processing system including program instruction retrieving and executing apparatus and system sequence controls having interruption request accepting means operating only between the termination of one instruction and the retrieving of the next instruction for conditionally performing interruption accepting operations (1.4) independent of said executing apparatus, each said accepting operation consisting of at least a first operation (1.4.3.2) to clear a selected active request, a second operation (part of 1.4.3.4) to store status information associated with an old program of instructions currently being performed, a third operation (part of 1.4.3.4) to store status information associated with a first level and subsequently a second level supervisory interruption handling program to be executed by said executing apparatus, the status information of the interruption handling program having means for disabling said accepting means from accepting a further interruption until the status is modified, and a fourth operation to begin the execution of the first level supervisory interruption handling program by said executing apparatus, wherein the improvement comprises apparatus (FIG. 2) associated exclusively with said executing apparatus for facilitating the recursive performance of said interruption handling program routine by said executing apparatus, comprising:

means responsive to and operated only during execution of a predetermined instruction (TPI) by said executing apparatus in said second level supervisory interruption handling program, said instruction having means uniquely identifying said interruption class, including,

means responsive to interruption requests for determining (2.3, 2.5) if any interruption requests of the same class are active;

means responsive to a determination by said determining means that at least one interruption request of the same class is active for clearing (2.8.3) a selected one of said active requests; and means responsive to operation of said clearing means for storing an interruption code (2.8.4) associated with the selected request and setting a condition code for use by said executing apparatus to subsequently retrieve and execute a predetermined next instruction (branch on condition) in the second level interruption handling program currently being executed;

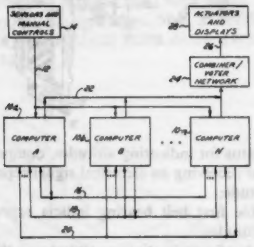
said facilitating apparatus being susceptible of recursively accepting another interruption request while said accepting means is disabled.

4,342,083

COMMUNICATION SYSTEM FOR A MULTIPLE-COMPUTER SYSTEM

Morris D. Freedman, Southfield, and Arliss E. Whiteside, Royal Oak, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 5, 1980, Ser. No. 118,694
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **5 Claims**



1. In a multiple-computer or distributed computing system having a plurality of computers responsive to input signals from external sources for executing a predetermined set of task to produce an output signal controlling at least one external device, wherein each computer is capable of selecting and executing a subset of said predetermined set of tasks in a coordinated manner with all of the other computers in said multiple-computer system, an inter-computer communication network for transmitting multiple bit messages identifying the tasks selected by the individual computers and multiple-bit messages containing the data resulting from the execution of the tasks selected and executed by the computers comprising:

a plurality of transmitters, one in each computer for transmitting, in a serial format, the messages identifying the tasks selected and the messages containing the data generated by its associated computer;

a plurality of receivers in each computer, equal in number to the number of computers in the system, each receiver in each computer associated with a different computer in the system including a receiver associated with its own computer, and wherein each receiver includes means for converting the received messages from a serial format to a parallel format for utilization in the associated computer, and means for adding to each received message coded information indentifying the computer with which said receiver is associated;

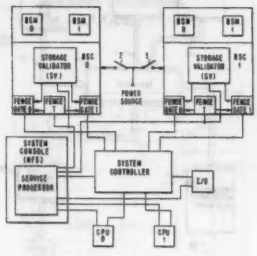
a plurality of communication links, one associated with each of said computers, each of said plurality of communication links interconnecting the transmitter of the associated computer with each associated receiver in the other computers and the receiver associated with its own computer, each communication link comprising a pair of wires.

4,342,084

MAIN STORAGE VALIDATION MEANS

Gordon S. Sager, Salt Point, and Arthur J. Sutton, Cold Spring, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 11, 1980, Ser. No. 176,827
Int. Cl.³ G06F *11/10*; G11C *29/00*
U.S. Cl. 364—200 **22 Claims**



1. A main storage validation means for a data processing system having at least one central processor (CPU), a main storage having a plurality of basic system modules (BSMs) arranged in sets with at least one BSM being in each set, and a console having a service processor, comprising

a plurality of fencing means connected to the CPU interfaces of the respective BSM sets for operationally disconnecting any BSM set from the CPU without affecting the operation of the CPU with any other BSM set in the system;

a plurality of BSM validation means, each BSM validation means being associated with a respective BSM set for testing any BSM in the respective BSM set,

means connecting the service processor to the fencing means of each BSM set to permit the service processor to isolate any BSM set operationally from the CPU;

and means for receiving commands from the service processor with each BSM validation means to control a test of a BSM in the selected set; and

whereby the service processor can control a test of any BSM isolated by the fencing means without disrupting the operation of the data processing system.

4,342,085

STEM PROCESSING FOR DATA REDUCTION IN A DICTIONARY STORAGE FILE

David Glickman, Frederick, Md.; Evon C. Greanias, Chappaqua, N.Y.; James T. Repass, Gaithersburg, and Walter S. Rosenbaum, Bethesda, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 5, 1979, Ser. No. 1,123
Int. Cl.³ G06F *5/00, 11/00*
U.S. Cl. 364—300 **11 Claims**

1. A method for minimizing the number of data segments in a dictionary storage file comprising the steps of:

(a) defining a set of prefix data segments;

(b) defining a set of suffix data segments;

(c) defining a minimum length for input data segments;

(d) receiving an input data segment;

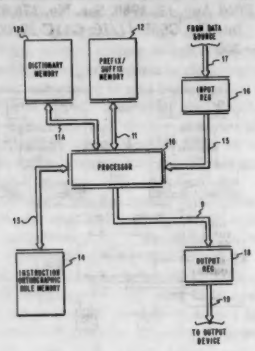
(e) testing said input data segment for minimum length plus suffix length;

(f) comparing the low order characters of said input data segment to each suffix data segment in said set of suffix data segments when said input data segment length is at least equal to the minimum length plus the suffix length;

(g) truncating said input data segment to remove said low order characters that compare equal to one of said suffix data segments;

(h) testing said input data segment for minimum length plus prefix length;

(i) comparing the high order characters of said input data segment to each prefix data segment in said set of prefix data segments when said input data segment length is at least equal to the minimum length plus the prefix length;
(j) truncating said input data segment to remove said high order characters that compare equal to one of said prefix data segments;
(k) comparing the truncated input data segments to the contents of said dictionary storage file; and
(l) storing said truncated input data segment in said dictionary storage file when said compare is unequal.

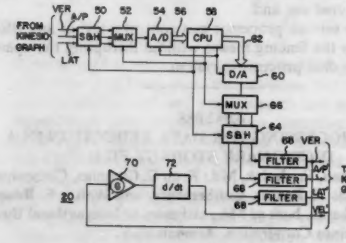


4,342,086

COMPENSATING SYSTEM FOR KINESIOGRAPH MANDIBULAR TRACKER

Freydoon Adib, Seattle, Wash., assignor to Myo-Tronics, Inc., Seattle, Wash.

Filed Jul. 3, 1980, Ser. No. 165,795
Int. Cl.³ A61B 5/05
U.S. Cl. 364—415 **12 Claims**



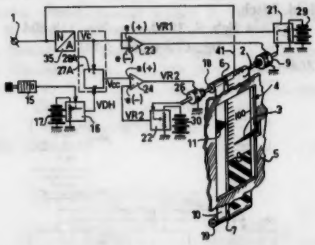
1. In a kinesiograph mandibular tracker for measuring mandibular movements in at least one plane, said kinesiograph mandibular tracker including an array of sensors each of which generates an output signal representing the distance between a reference point on a patient's mandible and that sensor, said kinesiograph mandibular tracker generating from said sensor output signals, position signals which correspond to the approximate position coordinates of said reference point in said plane, a system for compensating for geometric distortions inherent in said kinesiograph mandibular tracker, comprising:
first sample-and-hold means for periodically sampling said position signals and storing signals representative thereof;
second means for calculating from said storage samples, position coordinates corresponding to the actual position of said reference point within said plane using the same coordinate system as said approximate position coordinates; and
third means for generating respective corrected position signals which correspond to said actual position coordinates so that said corrected position signals may be applied to said kinesiograph mandibular tracker in the same manner that corresponding position signals are applied to said kinesiograph mandibular tracker, whereby said kinesiograph mandibular tracker can display the actual position of said reference point without significant internal modification.

4,342,087

INDICATOR HAVING BELTS, INTENDED IN PARTICULAR FOR A RADIO ALTIMETER

Guy F. M. Marin, Boulogne, and Michel M. R. Riffiod, Paris, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 8, 1980, Ser. No. 147,886
Claims priority, application France, May 9, 1979, 79 11747
Int. Cl.³ G01S *1/02*; G06F *15/48*
U.S. Cl. 364—433 **20 Claims**



1. An apparatus for indicating altitudes, comprising:
(a) means for receiving an electrical signal representative of a first altitude;
(b) a movable first belt bearing indicia representative of specific altitudes;
(c) an indicator for indicating an altitude on the first belt;
(d) means for positioning the first belt relative to the indicator to effect indication of the first altitude;
(e) means for providing an electrical signal representative of a second altitude;
(f) a movable second belt bearing a reference mark;
(g) means for positioning the second belt relative to the first belt to effect indication by the reference mark of the second altitude on the first belt;
characterized in that said means for positioning the first and second belts comprise, respectively:
(h) a first control including;
1. a first converter coupled to the first belt for producing an electrical signal representative of the position of the belt;
2. a first comparator having respective inputs for receiving a first control signal and the electrical signal representative of the position of the first belt, and having an output at which is provided an output signal representative of a difference between these received signals; and
3. a first driving means coupled to the first belt and electrically-connected to the output of the first comparator; and
(i) a second control including:
1. a second converter coupled to the second belt for producing an electrical signal representative of the position of the belt;
2. a second comparator having respective inputs for receiving a second control signal and the electrical signal representative of the position of the second belt, and having an output at which is provided an output signal representative of a difference between these received signals; and
3. a second driving means coupled to the second belt and

electrically-connected to the output of the second comparator;

(j) an arithmetic unit including first and second inputs for receiving the electrical signals representative of the first and second altitudes, respectively, and at least one output, for providing the first and second control signals to the first and second comparators, said arithmetic unit comprising:

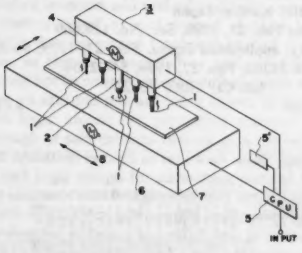
1. means for producing the first control signal, said first control signal representing the first altitude; and
2. means for producing the second control signal, said second control signal representing the difference between the first and the second altitudes.

4,342,088

MULTIFARIOUS BORING DEVICE

Hiroshi Sato, Fujisawa, Japan, assignor to Daiichi Electric Co. Ltd., Kanagawa, Japan

Filed Mar. 20, 1980, Ser. No. 132,164
Claims priority, application Japan, Mar. 27, 1979, 54-35106
Int. Cl.[3] G06F *15/20;* B23B *39/16, 39/24*
U.S. Cl. 364—474 10 Claims



1. A multifarious boring device comprising:

a head having mounted in a face thereof a plurality of machining tools including a base tool, each said tool being mounted on said head at a respective separate position thereof, and each said tool being operable at the said respective separate position thereof;

a work table spaced from said head and adapted to fixedly support a workpiece;

computer means, including at least one memory, for computing a first distance and relative direction between a particular said tool and said base tool and a second distance and direction between said base tool and a desired working point on the workpiece;

shifting means, operable connected to one of said head or said work table and controlled by said computer means, for shifting, in response to said first and second distances and directions, said one of said head or said work table relative to the other of said head or said work table, and thereby for aligning precisely said desired working point with said particular tool; and

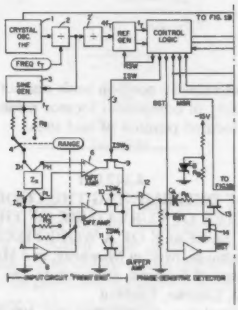
power means, operably connected to said tools and controlled by said computer means, for operating said particular tool at said respective separate position thereof, and without relative shifting of said respective positions of said tools with respect to said head, and thereby for performing a machining operation on the workpiece at said desired working point.

4,342,089

METHOD OF AND APPARATUS FOR AUTOMATIC MEASUREMENT OF CIRCUIT PARAMETERS WITH MICROPROCESSOR CALCULATION TECHNIQUES

Henry P. Hall, Concord, Mass., assignor to GenRad, Inc., Concord, Mass.

Division of Ser. No. 719,810, Sep. 2, 1976, Pat. No. 4,196,475.
This application Dec. 19, 1979, Ser. No. 105,269
The portion of the term of this patent subsequent to Apr. 1, 1997, has been disclaimed.
Int. Cl.[3] G06F *15/20*
U.S. Cl. 364—481 22 Claims



1. An apparatus for the automatic instrument measurement of a desired parameter comprising input switch means for supplying a plurality of voltages, the voltage values of which do not directly measure the desired parameter but which are related thereto by theoretical formulae; a phase-sensitive detector connected to the switch means for phase detecting the voltages; means for converting the phase-detected voltages to digital signals; control means for controlling the switch means; and microprocessor means for controlling the control means and for processing the digital signals in accordance with said formulae to automatically electronically calculate a quantity which is a measure of the desired parameter, said microprocessor means controlling the control means to cause the voltages to be successively supplied to the detector during a sufficiently short period of time to insure relatively constant stability of the detector and converting means during phase-detecting and converting.

4,342,090

BATCH CHIP PLACEMENT SYSTEM

George A. Caccoma, Poughkeepsie; Joseph H. Koestner, Hopewell Junction; Brian C. O'Neill, Millbrook, all of N.Y., and Frank M. Tappen, Plantation, Fla., assignors to International Business Machines Corp., Armonk, N.Y.

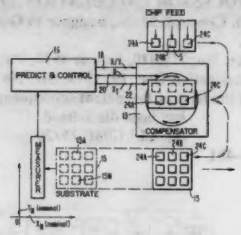
Filed Jun. 27, 1980, Ser. No. 163,671
Int. Cl.[3] G06F *15/46*
U.S. Cl. 364—491 33 Claims

26. A batch component placement system for positioning components at sites on a substrate where the sites vary in position from substrate to substrate, comprising:

substrate means having sites thereon including component sites;

automatic means for locating the position of said sites on said substrate means;

a plurality of component locator means positionable with respect to one another; and



means to individually position with respect to one another said plurality of component locator means in accordance with the located position of said sites.

4,342,091

METHOD OF DETERMINING THE COORDINATES OF THE CENTER OF CURVATURE OF THE CURVED SURFACE OF A WORKPIECE

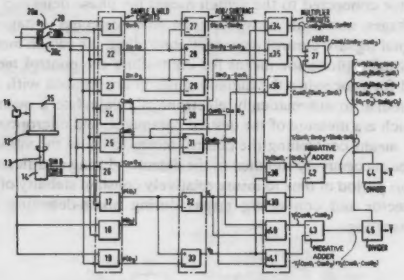
David J. Whitehouse, Melton Mowbray, and Harish C. Sharma, Leicester, both of England, assignors to The Rank Organisation Limited, London, England

Filed Jan. 3, 1980, Ser. No. 109,305

Claims priority, application United Kingdom, Jan. 4, 1979, 7900230

Int. Cl.³ G06F *15/20*; G01B *7/28*

U.S. Cl. 364—506 **3 Claims**



1. A method of centering a workpiece having a curved surface with respect to an axis of relative rotation between said workpiece and a surface measurement instrument of the type comprising:

a table,

means for mounting said workpiece on said table,

a sensor,

means mounting said sensor so that relative rotation between said sensor and said table can take place about an axis of relative rotation, said sensor being drawn in contact with the surface of said workpiece upon said relative rotation, comprising the steps of:

deriving signals representing the coordinates of the centre of curvature of said curved surface of said workpiece by traversing said sensor over the surface of said workpiece,

electrically deriving from the output of said sensor three signals representing the value of said sensor signal at three points of said traverse of the sensor,

generating signals representing the angular position of said three points,

electrically determining the difference Y_1 between the values of said sensor signals at said first and second points,

determining the difference Y_2 between the values of said sensor signals at said first and third points, and

electrically generating from said signals representing the values of said sensor signals at said three points of said transverse of said sensor, and from said signals representing the angular position of said three points, two output signals representing the expressions:

$$\bar{x} = \frac{Y_1(\sin\theta_1 - \sin\theta_3) - Y_2(\sin\theta_1 - \sin\theta_2)}{\sin(\theta_1 - \theta_3) + \sin(\theta_2 - \theta_1) - \sin(\theta_2 - \theta_3)}$$

and

$$\bar{y} = \frac{-Y_1(\cos\theta_1 - \cos\theta_3) + Y_2(\cos\theta_1 - \cos\theta_2)}{\sin(\theta_1 - \theta_3) + \sin(\theta_2 - \theta_1) - \sin(\theta_2 - \theta_3)}$$

where $\bar{x}$ and $\bar{y}$ respectively represent the coordinates of the centre of the workpiece parallel to and perpendicular to one axis of said predetermined frame of reference, and θ_1, θ_2 and θ_3 represent the angular position of said three points along said traverse of said sensor, with respect to said one axis of said predetermined frame of reference, and

displacing said workpiece with respect to said surface measurement instrument by a distance represented by said output signals thus produced, and

repeating said process iteratively a plurality of times.

4,342,092

INTEGRATED CIRCUIT DEVICE FOR CLOCK

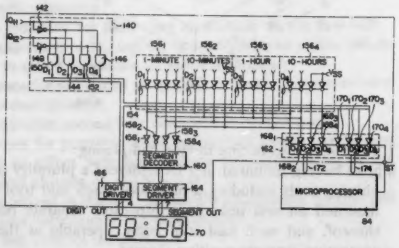
Shigeki Kumagi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 25, 1980, Ser. No. 124,600

Claims priority, application Japan, Feb. 27, 1979, 54-22202; Feb. 27, 1979, 54-22203; Feb. 27, 1979, 54-22204

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—569 **4 Claims**



1. A clock integrated circuit device comprising in a single-chip structure:

an internal bus;

a pulse generating means for producing a clock pulse signal;

a program memory means for storing microprograms;

a time counting means connected to said internal bus for counting time-of-day data through data processing with said clock pulse signal in accordance with a series of microprograms supplied from said program memory means;

a time-of-day data memory means connected to the internal bus for storing data corresponding to said time-of-day data;

an information input/output means connected to said internal bus and having register means for storing hour, minute, and second data received from said time-of-day data memory means for outputting said data in response to an external data transfer command; and

a display control circuit, including display means, connected to said internal bus for producing a control signal for displaying on said display means time count data obtained from said time counting means;

said information input/output means including:

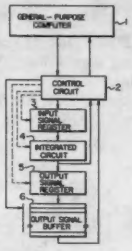
a terminal for receiving external control data instructing a data input operation;
a terminal for receiving external control data instructing a data output operation;
input/output terminals for receiving data from a central processing unit and supplying data to said central processing unit;
shift registers each consisting of a plurality of bits for storing data from said central processing unit or data supplied to said clock integrated circuit device;
one-bit registers each connected to the output side of each of said shift registers for storing leading bit data from the associated shift register;
first clocked logic circuits held closed to inhibit output of data from said shift registers to said input/output terminals at the time of the data input operation and held open to permit output of data from said shift registers to said input/output terminals at the time of the data output operation;
second clocked logic circuits held open to permit writing of data coupled to said input/output terminals into said shift registers at the time of the data input operation and held closed to inhibit writing of data coupled to said input/output terminals into said shift registers at the time of the data output operation;
first clocked inverters connected to the output side of said shift registers for coupling data outputted from said shift registers to a bus line under the control of a load signal;
second clocked inverters connected between said bus lines and the input side of said shift registers for coupling data on said bus line to said shift registers under the control of a store signal;
third clocked inverters connected between said second clocked inverters and said second logic circuits for coupling a control signal to said second clocked logic circuits to inhibit data outputted from said second clocked logic circuits so that data supplied to said input/output terminals should not be coupled to said shift registers at the time when data on said bus line are being stored in said shift registers;
a first logic circuit for permitting selective passage therethrough of said external control data instructing a data output operation as well as said load signal and store signal;
a second logic circuit for permitting passage therethrough of the output of said first logic circuit in synchronism to a basic clock signal from said central processing unit;
a flip-flop for coupling a control data to said first and second clocked logic circuits and also supplying said control data through said bus line to said central processing unit under the control of an input instruction at the time of the data input operation and coupling an input instruction received from said central processing unit through said bus line to said first and second logic circuits at the time of the data output operation;
a fourth clocked inverter connected between said bus line and said flip-flop for coupling an output instruction received from said central processing unit to said flip-flop under the control of a store signal; and
a fifth clocked inverter connected between said bus line and said flip-flop for coupling an input instruction from said flip-flop to said bus line under the control of a load signal.

4,342,093
METHOD OF DIGITAL LOGIC SIMULATION

Masayuki Miyoshi, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 13, 1980, Ser. No. 149,547
Claims priority, application Japan, May 15, 1979, 54-59354
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—578 **2 Claims**

1. A method of logic simulation comprising the steps of:
(a) providing a real circuit among a logic circuit to be simulated as a part thereof,
(b) forming a simulation model including said real circuit and a simulation circuit,
(c) operating said real circuit at predetermined cycles, and buffering an output signal of said real circuit during said predetermined cycles in accordance with a time when the output signal changes,
(d) subsequently executing the logic simulation of said simulation circuit over the same cycles as said predetermined cycles by using the output signal buffered in said step (c) as a stimulus to an input node of said simulation circuit, and

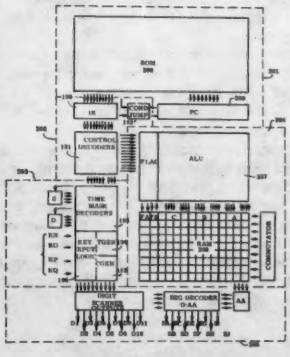


(e) subsequently executing said step (c) in response to an input signal applied to said real circuit representing the condition of an output node of said simulation circuit which is obtained by the execution of said step (d) so that said real circuit operation and said simulation circuit operation alternate with one another.

4,342,094
DISPLAY METHOD FOR VARIABLE FUNCTION PROGRAMMED SYSTEM

Gary W. Boone, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 856,932, Dec. 2, 1977, Pat. No. 4,242,675, which is a continuation of Ser. No. 420,999, Dec. 3, 1973, abandoned, which is a continuation of Ser. No. 163,565, Jul. 19, 1971, abandoned. This application Jan. 12, 1979, Ser. No. 2,811
Int. Cl.³ G06F *3/14, 13/00*
U.S. Cl. 364—900 **7 Claims**



1. An electronic system having output means for repetitively outputting a sequence of data words to electronic display utilization means from a large-scale-integrated semiconductor unit, the output means comprising: data memory means included in the unit in the form of an array of memory cells for storing said sequence of data words in bit-parallel in a first coded format, with means included in the unit and coupled to the data memory means for repetitively transferring in bit-parrallel said sequence of data words one word at a time to an intermediate storage location, a logic array included in the unit

Raisin, Jean-Pierre: *See*—
Doyen, Joel; and Raisin, Jean-Pierre, 4,346,877, Cl. 271-19.000.

Ram Handler, Ltd.: *See*—
Wagner, Robert L., 4,346,671, Cl. 119-60.000.

Ranco Incorporated: *See*—
Gemma, Mario; and Baehr, Burghard, 4,346,564, Cl. 62-140.000.

Rand, John H., to United States of America, Army. Liquid sampler. 4,346,612, Cl. 73-864.440.

Rao, G. R. Mohan, to Texas Instruments Incorporated. Semiconductor integrated circuit memory device with both serial and random access arrays. 4,347,587, Cl. 365-189.000.

Rapier, Pascal M., to United States of America, Energy. Multi-stage flash degaser. 4,346,560, Cl. 60-641.300.

Rashbrook, Robert B.: *See*—
Horner, Patrick J.; and Rashbrook, Robert B., 4,347,350, Cl. 528-190.000.

Raue, Donald J.: *See*—
Skladzien, Stanley B.; and Raue, Donald J., 4,346,605, Cl. 73-861.130.

Raus, James E.: *See*—
Pearcy, Robert E.; and Raus, James E., 4,347,552, Cl. 361-398.000.

Rautiola, Norman A.: *See*—
Taylor, Robert E.; Rautiola, Norman A.; and Miller, Gerald K., 4,347,444, Cl. 307-141.000.

Ray, John G.: *See*—
Latassa, Frank M.; and Ray, John G., 4,347,460, Cl. 315-63.000.

Ray, Ranjan; Polk, Donald E.; and Giessen, Bill C., to Marko Materials, Inc. Aluminum-transition metal alloys made using rapidly solidified powers and method. 4,347,076, Cl. 75-0.50R.

Raychem Corporation: *See*—
Martin, Albert R., 4,347,487, Cl. 333-1.000.

Raymor, Roger F.; and Adams, Les, to Seligco Food Corporation. Frozen food container. 4,346,815, Cl. 220-306.000.

Raytheon Company: *See*—
Liang, Victor K. C.; Bouyssounouse, Bernard; and Yim, Ernest W., 4,346,512, Cl. 29/571.000.
Maguire, Edward A.; and Gentilman, Richard L., 4,347,210, Cl. 264-294.000.

Raz, Zeev, to Ben-Gurion University of the Negev, a part interest. Water faucet and attachment therefor. 4,346,735, Cl. 137-606.000.

Razdan, Raj K.: *See*—
Quick, James E.; Razdan, Raj K.; and Dalzell, Haldean C., 4,347,361, Cl. 546-45.000.

RCA Corporation: *See*—
Benner, Timothy E., 4,347,459, Cl. 313-383.000.
Botez, Dan, 4,347,486, Cl. 372-46.000.
Speer, Walter F., 4,347,628, Cl. 455-173.000.
Tomasetti, Charles M.; and Ulaky, John A., 4,347,458, Cl. 313-103.00R.

Redder, Manfred; and Grundken, Dieter, to Gewerkschaft Eisenhutte Westfalia. Lubricating sprocket drum mounting. 4,346,801, Cl. 198-500.000.

Redifon Simulation Limited: *See*—
Spooner, Archer M., 4,347,507, Cl. 340-705.000.
Spooner, Archer M., 4,347,508, Cl. 340-705.000.

Redwine, Michael A.: *See*—
Reed, Stewart D.; Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Redwine, Michael A.; and Kilbourn, Frederick A., 4,346,485, Cl. 4-555.000.

Reed International Limited: *See*—
Gill, Anthony; Gosden, John; and Parker, Robert W., 4,346,921, Cl. 285-110.000.

Reed, Robert D.; Martin, Richard R.; and Goodnight, Hershel E., to John Zink Company. Low NOX burner. 4,347,052, Cl. 431-188.000.

Reed, Stewart D.; Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Redwine, Michael A.; and Kilbourn, Frederick A., to Silchor. Apparatus and method for bathing invalids. 4,346,485, Cl. 4-555.000.

Reh, Lothar; Hirsch, Martin; Baron, Gerhard; Blaum, Eberhard; and Hafke, Carl, to Metallgesellschaft Aktiengesellschaft. Process of gasifying fine-grained solid fuels. 4,347,064, Cl. 48-197.00R.

Reilly, Edward J.: *See*—
Williams, Glenn L.; and Reilly, Edward J., 4,347,518, Cl. 346-1.100.

Reinsch, A. O. Winfried. Flash jet coolant pumping system. 4,347,623, Cl. 376-392.000.

Relyea, John W.: *See*—
Alley, Robert P.; Pohl, Walter J.; and Relyea, John W., 4,346,755, Cl. 165-17.000.

Remcor Products Company: *See*—
Miller, Benjamin D.; and Schafer, Albert L., 4,346,824, Cl. 222-504.000.

Rempfler, Hermann: *See*—
Lukaszczyk, Alfons; Martin, Henry; Diel, Peter J.; Fory, Werner; Gatzi, Karl; Kristinsson, Haukur; Muller, Beat; Muntwyler, Rene; Pachlatko, Johannes P.; Rempfler, Hermann; Schurter, Rolf; and Szczepanski, Henry, 4,347,372, Cl. 548-217.000.

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Scarton, Henry A.; Kennedy, Warren C.; Gaylo, Keith R.; and Caplan, Clark R., 4,346,783, Cl. 181-230.000.

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Latimer, John P.; Donaldson, Robert; Cross, Michael; MacPhaiden, Harold; Skiles, Loren D.; Schauer, Henry; and Reynolds, Thomas J., 4,347,029, Cl. 414-22.000.

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Nudenberg, Walter; Rim, Yong S.; and Matthews, Demetreos N., 4,347,159, Cl. 252-429.00B.

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Eblen, Ewald; and Hofmann, Karl, 4,346,846, Cl. 239-533.300.
Fischer, Hermann; Friese, Karl-Hermann; Gruber, Hans-Ulrich; Heinemann, Wolfgang; Knoll, Gunter; Linder, Ernst; Maurer, Helmut; Noack, Rainer; Steinke, Leo; Weber, Lothar; and Weyl, Helmut, 4,347,113, Cl. 204-195.00S.
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Hunter, Donald N.; and Brook, Richard J., 4,347,495, Cl. 338-34.000.
Rosen, Robert A.; Schuchmann, Gayle F.; and Pate, James E., to Puro Corporation. Float controlled liquid dispenser. 4,346,483, Cl. 4-227.000.
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Weber, Kurt; Rutsch, Peter; and Hirschinger, Lothar, 4,347,276, Cl. 428-160.000.
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Manten, Heinrich, 4,346,766, Cl. 173-23.000.
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Nagasaki, Michisuke; and Sannomiya, Shigehiro, 4,346,624, Cl. 74-784.000.
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Sano, Shoichi: *See—*
Osada, Isao; and Sano, Shoichi, 4,346,747, Cl. 152-158.000.
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Iwao, Jun-ichi; Oya, Masayuki; and Iso, Tadashi, 4,347,371, Cl. 548-201.000.
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Jeromin, Lothar S.; Geddes, Glenn F.; Baumann, Otto S.; and Santoro, Joseph F., 4,346,983, Cl. 355-3.00R.
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Sprague, Robert A.; and Sarid, Dror, 4,346,965, Cl. 350-358.000.
Saron, John R. Flexible light with protective cap. 4,347,553, Cl. 362-189.000.
Sato, Atsushi; Takahashi, Naoya; Endo, Keiji; and Yanagishita, Hitoshi, to Nippon Petrochemicals Company, Limited. Electrical insulating oil and oil-filled electrical appliances. 4,347,169, Cl. 252-567.000.
Sato, Fumitaka: *See—*
Koda, Akira; Sato, Fumitaka; and Nishibe, Shinji, 4,347,566, Cl. 364-200.000.
Sato, Hajime; Morisue, Tetsuo; and Heki, Hideaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Failed fuel detection and location apparatus. 4,347,214, Cl. 376-251.000.
Sato, Shigeru: *See—*
Inagaki, Masao; and Sato, Shigeru, 4,346,837, Cl. 236-34.500.
Saunders, William T., to National Steel Corporation. Manufacture of lightweight drawn and ironed can bodies. 4,346,580, Cl. 72-344.000.

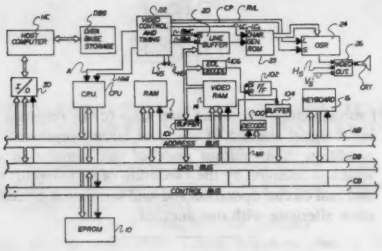
having parallel inputs for receiving said data words in the first coded format from the intermediate storage location and having parrallel outputs for outputting to said display utilization means representations of said data words repetitively in said sequence in a second coded format, the logic array being mask-programmable in manufacture to provide one of a variety of different representations in the second coded format for a given data word of the first coded format.

4,342,095

COMPUTER TERMINAL

Richard W. Goodman, Ann Arbor, Mich., assignor to Harris Corporation, Melbourne, Fla.

Filed Apr. 2, 1979, Ser. No. 26,026
Int. Cl.³ G06F 9/32, 3/153
U.S. Cl. 364—900 **17 Claims**



1. Apparatus comprising:

data processing means for manipulating data in response to instructions supplied thereto and having program counter means periodically incremented in response to each said instruction for providing addresses for normally addressing locations in a memory means to obtain said instructions;

memory means responsive to said addresses for providing said instructions and other data, said memory means having a first group of addressable storage locations for supplying said instructions and a second group of addressable storage locations for supplying other data;

means for utilizing said other data when obtained from said memory means;

said data processing means includes means for setting said program counter to a selected count representative of a particular address so that a count may be set representative of a starting address within said second group of storage locations; and

control means for controlling supply of said other data to said utilization means and including means for supplying a coded data word representative of a selected said instruction to said data processing means for incrementing said program counter so long as said program counter provides addresses corresponding with said second group of addressable storage locations whereby said program counter will be providing addresses to obtain said other data instead of said instructions.

4,342,096

VARIABLE PITCH CHARACTER GENERATOR FOR DOT MATRIX PRINTER

Bernard J. McDevitt, Norristown, Pa., assignor to Sperry Corporation, New York, N.Y.

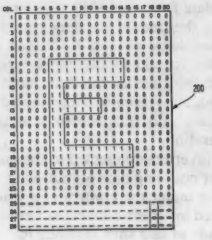
Filed Feb. 15, 1980, Ser. No. 121,845
Int. Cl.³ G06F 3/12
U.S. Cl. 364—900 **2 Claims**

1. A dot matrix printing apparatus for printing a series of character shapes with proportional spacing and having a character generator memory for storing each of a plurality of character shapes as a pattern of binary ones and zeros in a character matrix, each of said character matrices comprising a plurality of multiple bit columns wherein the first one said columns is associated with a character starting address, each of said columns comprising at least one parity check bit, said apparatus comprising:

selection means for selecting a character matrix for printing;

transmitting means connected to said selection means for transmitting sequentially said columns of said selected character matrices;

end of character means connected to said selection means and said transmitting means for generating an EOC indication signal to stop transmission of said selected character matrix at one of said sequentially transmitted columns and to signal said selection means for selecting a new character matrix for printing, said end of character means comprising:



N EOC flag bits within each of said columns where N is an integer greater than or equal to 2, said N EOC flag bits capable of forming 2^N bit patterns;

decoding circuitry for decoding a portion of said 2^N bit patterns as valid and invalid EOC indication signals and the remaining portion of said 2^N bit patterns as valid and invalid NOT EOC indication signals; and

wherein said apparatus further comprises:

parity checking means connected to said character generator memory for checking the parity of said transmitted columns; and

stop printing means connected to said parity checking means and said decoding circuitry to stop printing of said dot matrix printer when said parity checking means indicates no error and said decoding circuitry transmits an invalid indication signal whereby said printing is stopped when it is believed that said EOC bits are in error.

4,342,097

MEMORY BUFFER

Morris Herman, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Feb. 28, 1980, Ser. No. 125,721
Int. Cl.³ G06F 3/04, 7/00
U.S. Cl. 364—900 **3 Claims**

1. A memory buffer for providing an indication of the number of times signals having a unique characteristic have been produced by an input system and for supplying such indication to an output system, such memory buffer comprising:

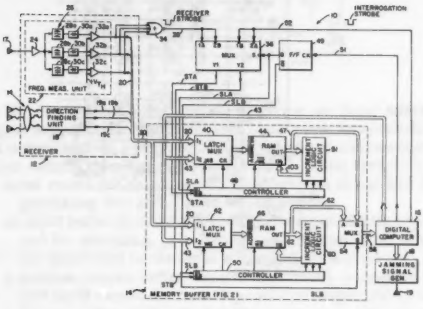
(a) a pair of addressable memories;

(b) means for producing timing pulses independently of the signals produced by the input system, such timing pulses indicating a first predetermined period of time and a second, subsequent, predetermined period of time;

(c) a plurality of switching means, each one having a pair of input terminals, a first one thereof being fed by the input system and a second one thereof being fed by the output system and responsive to the timing pulses for coupling, during the first predetermined period of time, digital words produced by the input system to identify the characteristics produced by the input signal to address terminals of a first one of said pair of addressable memories the

locations of each one of the memories being associated with the unique characteristic of the produced signals, and for coupling during the first period of time, digital words produced by the output system to identify characteristics of the signals produced by the input system to a second one of the pair of addressable memories and for coupling, during the second predetermined period of time, the digital words produced by the input system to address terminals of the second one of the pair of addressable memories and the digital words produced by the output system to the first one of the pair of memories;

(d) means, responsive to data stored in the locations of the first one of the pair of memories addressed by the input system during the first period of time for incrementing the data in such addressed location and for transferring such



incremented data for storage in such first one of the addressable memories at the addressed location, such stored data providing an indication of the number of times signals have been produced by the input system with the unique characteristic associated with the location addressed by the input system;

(e) output switching means having a pair of input terminals coupled to the pair of addressable memories and responsive to the timing pulses for coupling the data stored in the location of the first one of the pair of memories addressed by the output system during the second period of time to such output system to provide such output system with an indication of the number of times signals having the unique characteristic associated with the location addressed by the output system have been produced by the input system during the first predetermined period of time.

4,342,098

ASYMMETRIC SAWTOOTH CONTIGUOUS DISK PROPAGATION PATTERN

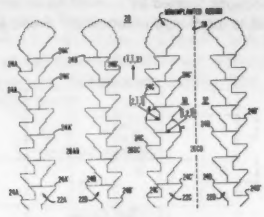
Hung L. Hu, Sunnyvale, and Kochan Ju, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,714
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—36 **5 Claims**

1. A contiguous disk propagation pattern having a plurality of parallel periodic propagation tracks comprising:

a first propagation track having cusps on first and second sides, said cusps on said second side shifted by about half of a period relative to said cusps on said first side; and

a second propagation track having cusps on first and second sides, said cusps on said second side shifted by about half of a period relative to the cusps on said first side, said



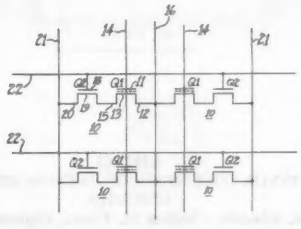
second track is shifted longitudinally about half of a period relative to said first track.

4,342,099

ELECTRICALLY ERASABLE PROGRAMMABLE MNOS READ ONLY MEMORY

Chang-Kiang Kuo, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 18, 1979, Ser. No. 49,526
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—104 **14 Claims**



1. A method of operating a semiconductor device of the type having a plurality of insulated gate field effect transistor cells in a face of a semiconductor body, each of the transistor cells having an MNOS transistor and an MOS transistor, each transistor having a source-drain path and a gate, the transistor cells being in a regular pattern to provide a memory array; the source-drain paths of the MNOS transistor and the MOS transistor being connected in series in each cell; said method comprising the steps of: programming the array of memory cells by applying voltage to the gates of both transistors in selected cells; and reading the array by applying voltage to the gate of only the MOS transistor in a selected cell; wherein the source-drain paths of the MNOS transistor and MOS transistor in each cell are formed between heavily-doped semiconductor regions which define the ground and output lines for the array.

4,342,100

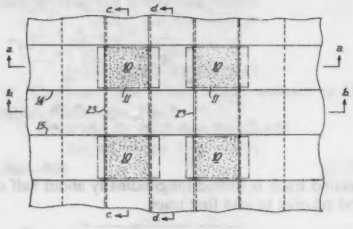
IMPLANT PROGRAMMABLE METAL GATE MOS READ ONLY MEMORY

Chang-Kiang Kuo, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 1,571, Jan. 8, 1979, Pat. No. 4,294,001. This application Jan. 19, 1981, Ser. No. 225,873
Int. Cl.³ G11C *17/00, 11/40*
U.S. Cl. 365—104 **2 Claims**

1. A read only memory array comprising: a plurality of memory cells formed at a face of a silicon body in an array of rows and columns; each memory cell including an insulated gate field effect transistor having a source, a drain and a gate, the gate being insulated from the silicon by a thin gate insulator for each transistor; a thick silicon oxide insulating coating on

said face covering the rows and columns of field effect transistors except above the gates; a plurality of parallel polysilicon strips on the face defining the rows and forming the gates; interconnections formed by a metal layer on top of all of said polysilicon strips except immediately above all of the gates so



that the polysilicon of each gate is not covered by metal; and impurity implanted regions underlying the gate and gate insulator for selected ones but not all of the memory cells to alter substantially the threshold of the transistors of such selected ones of the cells compared to the transistors of memory cells other than the selected ones.

4,342,101

NONVOLATILE SEMICONDUCTOR MEMORY CIRCUITS

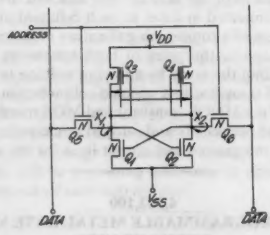
Colin W. Edwards, Chalfont St. Peters, England, assignor to Hughes Microelectronics Limited, Glenrothes, Scotland

Filed Oct. 31, 1980, Ser. No. 202,519

Claims priority, application United Kingdom, Nov. 12, 1979, 7939044

Int. Cl.³ G11C *13/00*

U.S. Cl. 365—154 **5 Claims**



1. A non-volatile bistable semiconductor latch having a pair of cross-coupled braches connectable across a common supply voltage, each branch including an NMOS transistor driver and an NMOS depletion load transistor connected in series at a respective node, at least one of said load transistors having a threshold voltage which may be varied by increasing the potential of a control gate of said transistor above a predetermined level relative to the potential on one of its other electrodes, whereby voltatile information held by the latch is rendered non-volatile by raising said control gate potential above said predetermined level.

4,342,102

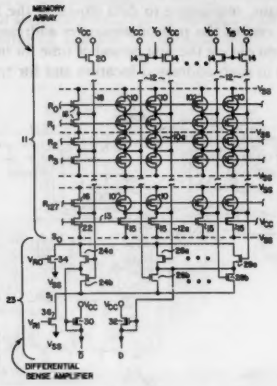
SEMICONDUCTOR MEMORY ARRAY

Deepraj S. Puar, Sunnyvale, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Jun. 18, 1980, Ser. No. 160,725

Int. Cl.³ G11C *7/00*

U.S. Cl. 365—207 **7 Claims**



1. In a semiconductor memory array including a plurality of memory cell transistors arranged in rows and columns and a plurality of main bit lines extending parallel to said columns, each main bit line coupled to a separate column of said memory cell transistors, the combination comprising:

(a) a column of reference cell transistors and a reference bit line extending parallel to said memory cell transistor columns and located within the same area of the memory array as said memory cell transistors;

(b) a plurality of word lines extending parallel to said rows of memory cell transistors and coupled respectively to the gates of the memory cell transistors and to the gate of the reference cell transistor lying in a given row;

(c) pull-up load transistor means coupled to each of said main bit lines and to said reference bit line;

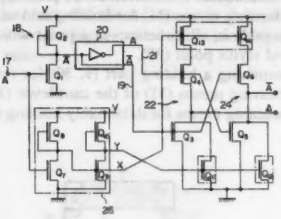
(d) pull-down transistor means coupled to each of said main bit lines and to said reference bit line; and

(e) means coupled between said reference bit line and each of said main bit lines to sense the presence or absence, effectively, of a memory cell transistor at an address determined by selecting a given word line and a given main bit line, characterized in that said pull-up load transistor means, said pull-down transistor means, said memory cell transistors, and said reference cell transistors are so related in size and gain that with operating voltages applied to said reference bit line and said main bit lines through said pull-up load transistor means, a difference in current through respective pull-up and pull-down transistor means of the reference bit line and main bit line will cause the selected main bit line to assume either a high potential level above the potential of said reference bit line to indicate the absence of a memory cell transistor at the selected memory cell address or a low potential level below the potential of said reference bit line to indicate the presence of a memory cell transistor at the selected memory address.

4,342,103
ADDRESS BUFFER CIRCUIT

Mitsuo Higuchi, Tokyo, and Kiyoshi Miyasaka, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 23, 1980, Ser. No. 171,272
Claims priority, application Japan, Jul. 27, 1979, 54-95836
Int. Cl.³ G11C *8/00*
U.S. Cl. 365—230 17 Claims



10. An address buffer circuit receiving an input address signal having first, second and third logic levels, and providing an output address signal and an inverted output address signal to an address decoder, said address buffer circuit comprising:

input means for receiving the input address signal and for generating first and second output signals;

an input buffer circuit for receiving the input address signal and for providing, as an output, a switching signal when the third level of the input address signal is received;

a positive output buffer circuit, operatively connected to said input means, for receiving said first output signal and for providing said output address signal to the address decoder;

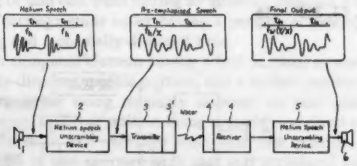
a negative output buffer circuit, operatively connected to said input means, for receiving said second output signal and for providing said inverted output address signal to the address decoder;

clamping means, operatively connected to said positive and negative output buffer circuits and to said input buffer circuit, for clamping both said output address signal and said inverted output address signal to a predetermined logic level when said switching signal is received from said input buffer circuit.

4,342,104
HELIUM-SPEECH COMMUNICATION

Mervyn A. Jack, Penicuik, Scotland, assignor to University Court of the University of Edinburgh, Edinburgh, Scotland

Filed Oct. 30, 1980, Ser. No. 202,300
Claims priority, application United Kingdom, Nov. 2, 1979, 7937994
Int. Cl.³ H04B *11/00*
U.S. Cl. 367—132 9 Claims

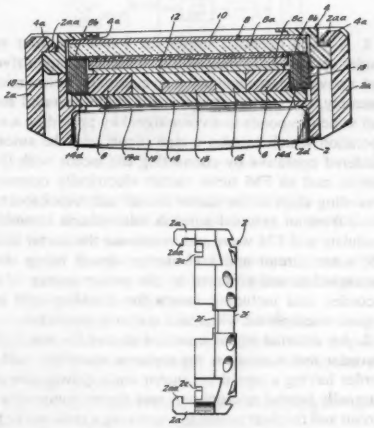


6. Apparatus for through-water transmission of helium-speech voiced by a diver comprising transmitting equipment for the diver comprising a microphone, an analogue speech unscrambling device to subject a leading part of each pitch period of the diver's speech received from the microphone to waveform time expansion and thereby to reduce the bandwidth of the helium-speech signals, and means to transmit the reduced bandwidth signals to a listener location, the transmitting means comprising a through-water communications transmitter to receive the reduced bandwidth signals and a transducer to feed the output from the transmitter directly into the water to the listener location, and at the listener location a receiving transducer, a further analogue helium-speech unscrambling device of variable expansion ratio, which is adjustable by a listener at said listener location, and a sound generator, for said listener, receiving output signals from the said further unscrambling device.

4,342,105
TIMEPIECE MODULE FRAME AND ASSEMBLY

Leonard Dorfman, Santa Clara, Calif., assignor to Timex Corporation, Waterbury, Conn.

Filed Jun. 23, 1980, Ser. No. 161,807
Int. Cl.³ G04C *23/02*
U.S. Cl. 368—88 9 Claims



1. A snap-together module frame for packaging an electrooptic display, printed circuit board carrying electronic components and a battery for an electronic timepiece comprising:

(a) a first plastic pod member having a first recess to receive the electrooptical display and an aperture configured to provide a window for viewing the display,

(b) a second plastic pod member having a second recess shaped to receive the battery and having first alignment means,

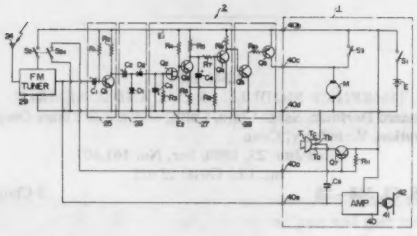
(c) an intermediate plastic pod member adapted to carry the printed circuit board, said intermediate pod member being disposed between said first and second pod members and having second alignment means to cooperatively engage the first alignment means of said second pod member to locate the printed circuit board and electronic components thereon in preselected relation to said display and battery, and wherein the intermediate pod member further includes an outer wall defining edge slots to receive conductive connectors for electrically coupling the electronic components on said printed circuit board to said display,

second pod member further having a pair of resilient gripping arms extending toward said first pod member along opposite sides and said first pod member having a pair of gripped surfaces on opposite sides against which the resilient arms are snap-fitted.

4,342,106
REMOTELY CONTROLLABLE VOICE-OPERATED STARTER FOR TAPE RECORDER

Masanobu Sato, and Norio Fukuoka, both of Hachioji, Japan, assignors to Olympus Optical Company, Ltd., Tokyo, Japan

Filed May 21, 1979, Ser. No. 40,582
Claims priority, application Japan, Jul. 20, 1978, 53-89005
Int. Cl.³ G11B *31/00, 19/20*
U.S. Cl. 369—7 **6 Claims**



1. A voice operated starter for a tape recorder which includes an internally housed microphone, a tape driver motor and a power source and using an external wireless microphone assembly, the starter comprising a voice-operated starter circuit which responds to a voice signal by providing a switching operation which enables a tape recorder to be automatically rendered operative by connecting the motor with the power source, and an FM tuner circuit electrically connected as a preceding stage to the starter circuit and responsive to an FM wave from an external wireless microphone assembly to demodulate said FM wave and to activate the starter circuit, said FM tuner circuit and said starter circuit being electrically connected to and powered by the power source of said tape recorder, and including means for disabling said internally housed microphone when said starter is operative.

2. An external signal operated starter for use with a tape recorder and a wireless microphone assembly, said tape recorder having a tape drive motor and a power source and an internally housed microphone, said starter comprising a starter circuit and receiver means for receiving a radio wave from said wireless microphone assembly, said radio wave being modulated with an external signal and for providing said external signal in demodulated form, said receiver means electrically connected as a preceding stage to said starter circuit, said receiver means and said starter circuit being electrically connected to and powered by the power source of said tape recorder, said starter circuit operating as means for coupling said tape drive motor to said power source upon receiving said demodulated external signal, said coupling means comprising a rectifier connected to said receiver means, a level detector circuit connected to said rectifier for detecting the level of the signal received from said rectifier, and a switching circuit connected to said level detector circuit and adapted to couple said tape drive motor and said power source of said tape recorder upon receiving said demodulated external signal from said receiver means to automatically operate said tape recorder, and including means for disabling said internally housed microphone whenever said starter is operative.

4,342,107
PICK-UP NEEDLE

Heinrich Zimmermann, Joh. Seb. Bach. Str. 14, and Jörg Schamberger, Schwarzwaldstr. 8, both of 7742 St. Georgen, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 191,464
Int. Cl.³ G11B *3/02*
U.S. Cl. 369—172 **3 Claims**

1. A replaceable pick-up needle for a pick-up for the tracking of records, the pick-up containing an electro-mechanical transducer, comprising

a cartridge (1, 25),

a cantilever (10, 24) being substantially disposed in the longitudinal direction of the cartridge,

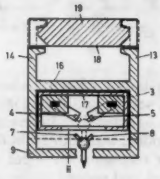
a stylus point (39) disposed at an end of said cantilever (10, 24),

connection means to the cantilever (10, 24) for transmitting the tracking movement of the cantilever (10, 24) to the electro-mechanical transducer in the pick-up,

an elastic bearing means (11) for holding said cantilever (10, 24) swingable in all directions at a point which is spaced from said stylus point (39),

means comprising a holding part (9, 30) for receiving said elastic bearing means (11) of the cantilever (10, 24),

a clamp fastening means for detachably holding said holding



part (9, 30) in an operating position on said cartridge (1, 25),

longitudinal guide means (3, 19, 9; 26, 28, 27, 29) for guiding said holding part in a direction of feed movement of said holding part (9, 30) relative to said cartridge (1, 25) in a direction substantially parallel to a longitudinal axis of the cartridge,

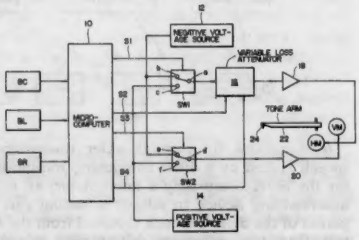
stop means (20) for limiting said feed movement of the holding part (9, 30) and defining an abutment end position thereof,

transverse guide means (21, 12, 22, 13; 33, 37, 34, 35, 38) for guiding said holding part in a feeding movement of said holding part (9, 30) into said operating position on said cartridge (1, 25) in a direction which is substantially transverse to said longitudinal axis of said cartridge beginning at the abutment end position of the feed movement of the holding part in the longitudinal direction of the cartridge.

4,342,108
VARIABLE SPEED TONE ARM CONTROL SYSTEM

Masatsugu Kitamura; Tsuyoshi Ono, and Hideo Onoye, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Oct. 3, 1980, Ser. No. 193,812
Claims priority, application Japan, Oct. 6, 1979, 54-129176
Int. Cl.³ G11B *3/08*
U.S. Cl. 369—216 **11 Claims**



1. A tone arm control system comprising:

first and second manually operated keys;

vertical moving means including means for moving said tone arm to an upward position in response to operation of either of said first and second keys;

horizontal moving means including means for moving said tone arm in a specified horizontal direction in response to operation of a specific one of said first and second keys after said tone arm is moved to the upward position,

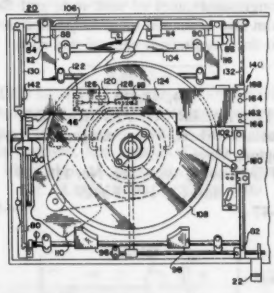
said horizontal moving means further including means for moving said tone arm at a first low speed for a predetermined interval after the movement to the upward position, and at a second higher speed subsequent to said predetermined interval.

4,342,109

CARRIAGE ALIGNMENT APPARATUS FOR VIDEO DISC PLAYER

Myron C. Stewart, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 6, 1980, Ser. No. 156,999
Int. Cl.³ G11B *3/10*
U.S. Cl. 369—249 **3 Claims**



1. An alignment apparatus comprising:

(A) a translatable pickup carriage having a pair of end walls; one of said end walls having an aperture disposed therein;

(B) a carriage guide roller having a peripheral guiding surface and a coaxially-disposed hole;

(C) an elongated element having a first portion, an eccentrically-disposed middle portion, and a further portion; said guide roller being rotatably disposed on said eccentric portion; said first portion being rotatably received in said aperture in said carriage wall; said first portion being turned in said aperture such that said peripheral guiding surface of said roller mounted on said eccentric portion occupies a desired spatial relationship with respect to said carriage; and

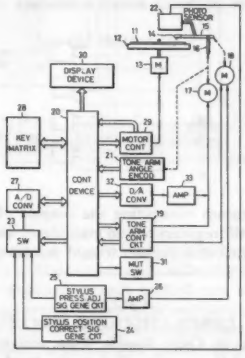
(D) means for fixedly mounting said elongated element carrying said guide roller on said eccentric portion thereof to said translatable carriage at said one end thereof; said further portion of said elongated element serving to retain said guide roller on said eccentric portion.

4,342,110

RECORD DISC PLAYING APPARATUS WITH AUTOMATIC CANCELLATION OF INSIDE FORCE ON TONE ARM

Masatsugu Kitamura, Atsugi; Hideo Onoye, Yamato; Fumiaki Ohno, Fujisawa; Tsuyoshi Ono, Yamato; Yukihiro Kishima, Fujisawa, and Yutaka Morita, Yokohama, all of Japan, assignors to Victor Company of Japan Ltd., Yohama, Japan

Filed Jul. 2, 1980, Ser. No. 165,372
Claims priority, application Japan, Jul. 6, 1979, 54/85573
Int. Cl.³ G11B *17/06*
U.S. Cl. 369—252 **7 Claims**



1. A record disc playing apparatus comprising:

a horizontal drive motor for imparting a horizontal rotational force to a tone arm;

address signal generating means for generating an address signal corresponding to a horizontal rotational angle position of the tone arm; and

a control device including a memory device for storing the magnitude of an inside force introduced with respect to the tone arm correspondingly with the horizontal rotational angle position of the tone arm,

said address signal generating means supplying the generated address signal to the control device,

said control device reading out the magnitude of the inside force from the memory device corresponding to the supplied address signal, and producing a signal for cancelling the inside force at the rotational angle position of the tone arm corresponding to the read out magnitude of the inside force and supplying the same to the horizontal drive motor.

4,342,111

DIGITAL BRIDGING APPARATUS FOR TELEPHONE CONFERENCING SYSTEM

Donald G. Busson, New Windsor, Md., assignor to The United States of America as represented by the Director, National Security Agency, U.S. Government, Washington, D.C.

Filed Nov. 18, 1980, Ser. No. 208,107
Int. Cl.³ H04M *3/56*
U.S. Cl. 370—62 **3 Claims**

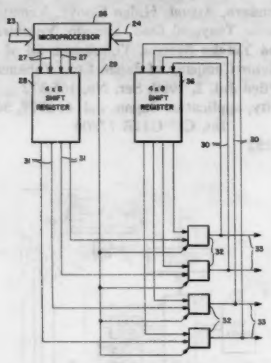
1. In a digital conferencing apparatus wherein a multiplexer receives a plurality of input signals and provides a single serial data stream, and a demultiplexer receives said serial stream and subsequently provides a plurality of output signals, controlling means, comprising:

a microprocessor;

a first shift register which sequentially receives from said

microprocessor signals indicative of the input signal to be routed into said serial data stream;

a second shift register, and



switching means connecting the outputs of said first and second shift registers to said multiplexer and also connecting said first shift register to said second shift register.

4,342,112

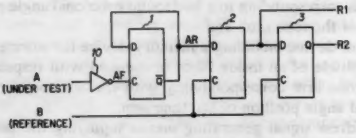
ERROR CHECKING CIRCUIT

Kevin C. Stodola, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 8, 1980, Ser. No. 185,119

Int. Cl.³ G06F *11/16*

U.S. Cl. 371—68 **13 Claims**



1. In a digital transmission system having a dual, redundant, bus structure with buses A and B, an error checking circuit comprising means responsive to one bus as a tested signal source and to the other bus as a reference signal source and generating a two rail logic output having complementary states in the absence of an error and having non-complementary states in response to an error, said error checking circuit additionally comprising first switch means gated by bus A, and second switch means responsive to said first switch means and gated by bus B, said second switch means generating said two rail output, wherein a failure in either of said first and second switch means is transmitted to said two rail output as a non-complementary state, indicating an error, whereby to afford a self-checking circuit which detects internal failures.

4,342,113

LASER APPARATUS

Akiyoshi Iwata, Sunnyvale, Calif., assignor to Quanta Ray Inc., Mountain View, Calif.

Division of Ser. No. 841,019, Oct. 11, 1977, Pat. No. 4,232,276. This application Apr. 28, 1980, Ser. No. 144,054

Int. Cl.³ H01S *3/02*

U.S. Cl. 372—33 **2 Claims**

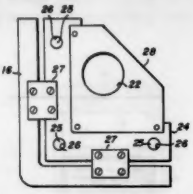
1. In a laser:

laser gain medium means for excitation with optical pump energy for inverting the population densities of certain predetermined energy levels of said gain medium which are capable of supporting laser transitions of a predetermined wavelength;

optical resonator means for reflecting optical radiation at said predetermined laser transition wavelengths to and fro through said laser gain medium means;

pump means for supplying optical pump energy to said laser gain medium;

elongated support means for physically supporting said laser gain medium means and said optical resonator means, said support means including an elongated beam member having a portion of generally L-shaped cross section, said L-shaped beam member portion being made of aluminum or copper, a plurality of rods made of a material having a coefficient of thermal expansion less than that of steel



extending longitudinally of said L-shaped member portion, means for supporting said rods from said L-shaped member portion, and means for supporting said resonator means from said rods;

said means for supporting said rods from said L-shaped member portion including, leaf spring means connected between said rods and said L-shaped member portion, said leaf spring means having an axis of maximum compliance extending generally parallel to the longitudinal axes of said rods, whereby said rods are rigidly supported from said L-shaped member portion in a direction orthogonal to said longitudinal axes of said rods and flexibly supported from said L-shaped member portion in a direction parallel to the longitudinal axes of said rods.

4,342,114

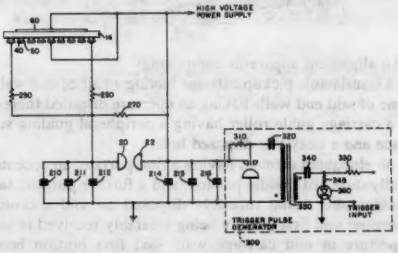
TEA LASER CONFIGURATION

Clarence F. Luck, Waltham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Feb. 4, 1980, Ser. No. 118,128

Int. Cl.³ H01S *3/09*

U.S. Cl. 372—87 **12 Claims**



1. In a transverse excitation pulsed laser having two main electrodes defining a main discharge region and including an elongated envelope containing a gain medium, the improvement comprising:

an insulating plate disposed longitudinally adjacent said main discharge region and having a first surface facing said discharge region;

a plurality of subsidiary electrodes disposed on said insulating plate, each of said subsidiary electrodes comprising a short metallic supporting element having a first end connected to said first surface of said insulating plate and a flange of a high melting point material disposed on a second end of said supporting element; and

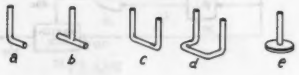
means for producing a discharge between adjacent ones of said flanges prior to the main discharge.

4,342,115

LASER DISCHARGE ELECTRODE CONFIGURATION

Jack W. Davis, East Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 6, 1980, Ser. No. 194,189
Int. Cl.³ H01S *3/09*
U.S. Cl. 372—87 8 Claims



1. A laser electrode array for use in an electrically excited gas laser apparatus comprising:

(a) a plurality of electrodes disposed in a plane on one side of an excitation region through which said lasing gas flows along a flow axis substantially parallel to said plane;

(b) a single row of preionization electrodes having an emitting surface of substantial area and being disposed in said excitation region substantially parallel to said plane and substantially transverse to said flow axis;

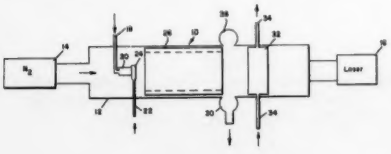
(c) at least two power electrodes disposed in said excitation region, oriented parallel to said single row of preionization electrodes, the furthest upstream of said power electrodes being spaced downstream from said single row of preionization electrodes by a first distance and the remainder of said power electrodes being uniformly spaced apart by a second distance.

4,342,116

DRY EXCITED SINGLET DELTA OXYGEN GENERATOR

Allen K. MacKnight, Rolling Hills Estates, and A. Colin Stancliffe, Palos Verdes Estates, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Mar. 11, 1980, Ser. No. 129,544
Int. Cl.³ C01B *13/00*; H01S *3/00*
U.S. Cl. 372—89 12 Claims



1. A method of producing coherent energy, said method comprising the steps of:

providing a flow of inert gas;

injecting a liquid mixture of hydrogen peroxide and potassium hydroxide into the flow of said inert gas;

interposing a flow of chlorine gas in the path of the liquid flow such that the chlorine, hydrogen peroxide and potassium hydroxide react to produce excited oxygen; and

combining the excited oxygen with atomic iodine such that the oxygen acts as an energy transfer agent to pump the $^2P_{\frac{1}{2}}$-$^2P_{3/2}$ spin orbit transition of said atomic iodine.

11. A method of generating excited oxygen, comprising the steps of:

producing a jet of chlorine gas; and

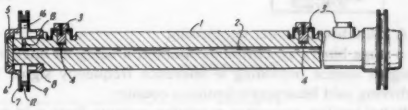
spraying a liquid mixture of hydrogen peroxide and potassium hydroxide against the jet of chlorine gas to produce a spray of liquid droplets substantially surrounded by the chlorine gas, such that the chlorine, hydrogen peroxide and potassium hydroxide react to produce excited oxygen.

4,342,117

MIRROR MOUNTING ARRANGEMENT FOR A LASER

Peter A. Singleton, London, England, assignor to Elliott Brothers Limited, Chelmsford, England

Filed Mar. 13, 1980, Ser. No. 130,049
Claims priority, application United Kingdom, Mar. 26, 1979, 7910546
Int. Cl.³ H01S *3/02*
U.S. Cl. 372—107 3 Claims



1. In a laser having a longitudinal laser body, an axial discharge channel in said laser body and a reflecting or refracting optical member disposed at each end of said channel, that improvement constituting: a seating for each said optical member, each said seating comprising a flanged frame in which a said optical member is mounted, a second flange fixed and sealed to the laser body, the flanges being pre-stressed and fixed together by welding to bias the optical member against the end of the laser body and pre-set its attitude to the axis of the discharge channel.

4,342,118

PANEL FOR ELECTRIC FURNACE

Xavier Tinchant, Villars, France, assignor to Clesid S.A., Saint-Chamond, France

PCT No. PCT/FR80/00003, § 371 Date Sep. 2, 1980, § 102(e) Date Sep. 2, 1980
PCT Filed Jan. 4, 1980, Ser. No. 219,309
Claims priority, application France, Jan. 4, 1979, 79 00131
Int. Cl.³ F27D *1/12*
U.S. Cl. 373—76 5 Claims

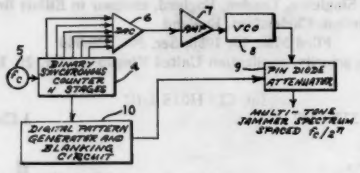
1. A panel cooled by the circulation of liquid, adapted to constitute at least part of a wall of an electric furnace, comprising, at the interior of the furnace, a thick, corrugated wall, a thinner wall welded to said thick wall at the exterior of said furnace, said thick and thinner walls defining between them passages for the circulation of said cooling liquid.

4,342,119

MULTI-TONE JAMMER

Loren R. Seidl, Irvine, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 27, 1980, Ser. No. 181,940
Int. Cl.[3] H04K 3/00; H04B 1/04
U.S. Cl. 455—1 9 Claims



1. A multi-tone jammer comprising

an n stage binary synchronous counter, n being an integer,

a signal source providing a reference frequency signal f_c driving said binary synchronous counter,

a digital/analog converter receiving outputs from said binary synchronous counter and generating a ramp waveform output signal therefrom,

a voltage controlled oscillator having an output, said voltage controlled oscillator being controlled by the output of said digital/analog converter, and

modulator means receiving and modulating the output of said voltage controlled oscillator and outputting a multi-tone jamming signal in response thereto, said modulator means comprising

attenuator means connected to control the output of said voltage controlled oscillator,

a digital pattern generator receiving a synchronizing signal from said binary synchronous counter and generating voltage controlled oscillator modulation signals, and

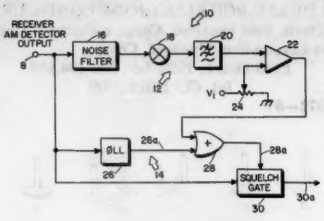
blanking circuit means controlling said attenuator means in response to said voltage controlled oscillator modulation signals.

4,342,120

SQUELCH SYSTEM FOR USE IN A MULTIPLE CARRIER AM COMMUNICATIONS SYSTEMS RECEIVER

David J. Settlemire, Pompano Beach; John D. Ide, Margate, and Mario C. Novo, Miami, all of Fla., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 10, 1980, Ser. No. 205,395
Int. Cl.[3] H04B 1/10
U.S. Cl. 455—222 6 Claims



1. A squelch system for use in a multiple carrier AM receiver having an output line and responsive to receiver detected AM signals comprising:

a noise squelch circuit operative in a first frequency band, which can include carrier difference frequencies, responsive to said receiver detected AM signals for generating a first squelch signal in the presence of noise and said carrier difference frequencies;

a phase locked loop means having a capture range encompassing said first frequency band and responsive to said receiver detected AM signals for generating a second squelch signal in the absence of said carrier difference frequencies; and,

a squelch gate means responsive to said first and second squelch signals for passing said receiver detected AM signal to said output line when in a first state and for interrupting said receiver detected AM signals when in a second state.

DESIGN PATENTS

GRANTED JUL. 27, 1982

ERRATA

For CLASS	See PATENT NO.
D32–074	265,541
D34–011	265,542
D32–049	265,601
D34–028	265,602
D34–028	265,603

265,520

YOUTH HOCKEY HELMET

Elwyn R. Gooding, Ann Arbor, Mich., assignor to Reagents of the University of Michigan, Ann Arbor, Mich.

Filed Sep. 30, 1980, Ser. No. 192,457

Term of patent 14 years

Int. Cl. D02—*03*

U.S. Cl. D2—231

265,521

SHOE

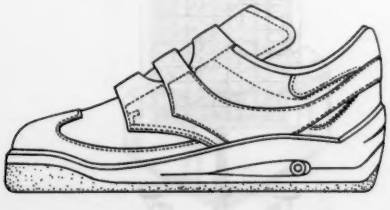
Christian Vermonet, Cholet, France, assignor to Societe Technisynthese (S.A.R.L.), Saint Pierre Montlimart, France

Filed May 6, 1980, Ser. No. 147,326

Term of patent 3½ years

Int. Cl. D2—*04*

U.S. Cl. D2—309



265,522

MOUNTING FOR A TOOL HOLDER

Roy V. Bladen, 74B Brigantine Dr., Birkenhead, Auckland, New Zealand

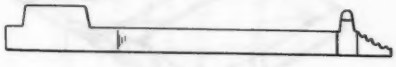
Filed Mar. 25, 1980, Ser. No. 133,680

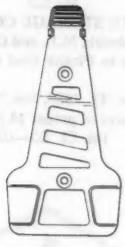
Claims priority, application New Zealand, Oct. 5, 1979, 16282

Term of patent 14 years

Int. Cl. D2—*99*

U.S. Cl. D2—400





265,523

JOGGER'S POUCH

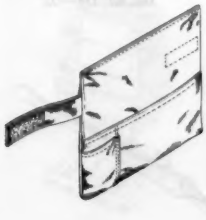
Howard Mermer, Yonkers, N.Y., assignor to Romer Industries, Inc., Yonkers, N.Y.

Filed Jul. 28, 1980, Ser. No. 173,043

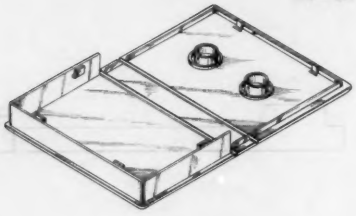
Term of patent 14 years

Int. Cl. D2—*07*

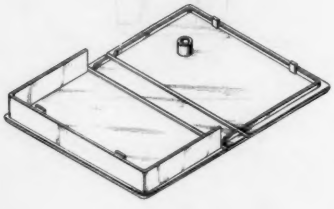
U.S. Cl. D2—402



265,524
VIDEO CASSETTE STORAGE CONTAINER
Robert A. Basili, Waldwick, and William B. Wilson, Middlesex, both of N.J., assignors to Plastic Reel Corp. of America, Wood Ridge, N.J.
Filed Aug. 28, 1980, Ser. No. 182,063
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



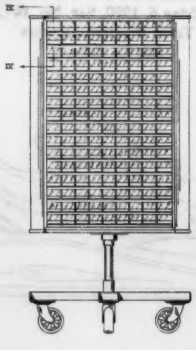
265,525
CASSETTE STORAGE CONTAINER
Robert A. Basili, Waldwick, N.J., and Gerald Weinstein, Brooklyn, N.Y., assignors to Plastic Reel Corporation of America, Wood Ridge, N.J.
Filed Dec. 11, 1980, Ser. No. 215,236
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



265,526
TOOTHBRUSH
Richard M. Hyman, Iowa City, Iowa, assignor to Cooper Laboratories, Inc., Palo Alto, Calif.
Filed Oct. 27, 1980, Ser. No. 200,907
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25

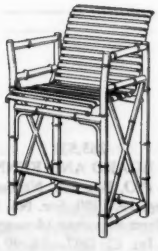
265,527
TOOTHBRUSH
Kenneth C. Macaluso, 130 Glencoe, San Antonio, Tex. 78212
Filed Apr. 6, 1981, Ser. No. 251,135
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25

265,528
POSTAL BAG TAG RACK
Wally H. Gregory, 1309 W. Hunt, Paragould, Ark. 72450
Filed Aug. 8, 1979, Ser. No. 64,878
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—24

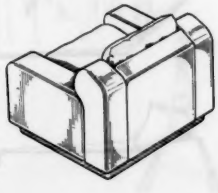


265,529
OTTOMAN
John Mascheroni, 200 E. 64th St., New York, N.Y. 10021
Filed Aug. 29, 1979, Ser. No. 70,780
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—36

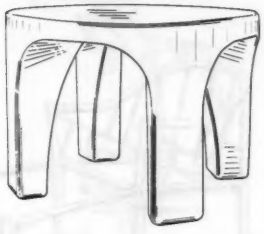
265,530
STOOL
Gregory D. Bergquist, Mountain Brook, and John A. Jones, Trussville, both of Ala., assignors to Simmons Universal Corp., New York, N.Y.
Filed Sep. 22, 1980, Ser. No. 189,456
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57



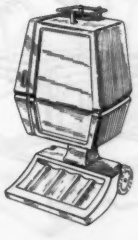
265,531
SEAT
Barry Brukoff, 201 Valley Rd., Sausalito, Calif. 94965
Filed Jun. 9, 1980, Ser. No. 157,557
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



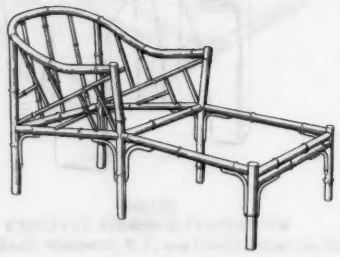
265,532
TABLE
Richard Baker, and Steven Baker, both of 880 Dillingham Rd., Pickering, Ontario, Canada L1W 1Z6
Filed Dec. 10, 1979, Ser. No. 101,898
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



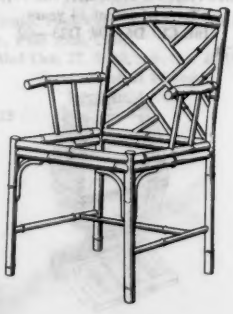
265,533
WINDSHIELD WIPER PRODUCTS CABINET
Marvin L. Adenau, Hoffman Estates, Ill., assignor to AMD Industries, Inc., Chicago, Ill.
Filed Nov. 26, 1979, Ser. No. 97,728
Term of patent 14 years
Int. Cl.[3] D6—*04;* D23—*02*
U.S. Cl. D6—174



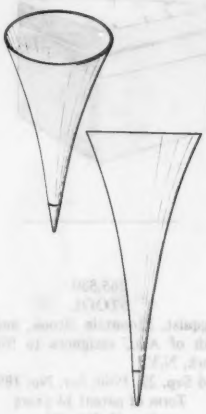
265,534
CHAISE FRAME
Gregory D. Bergquist, Mountain Brook, and John A. Jones, Trussville, both of Ala., assignors to Simmons Universal Corp., New York, N.Y.
Filed Sep. 22, 1980, Ser. No. 189,443
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



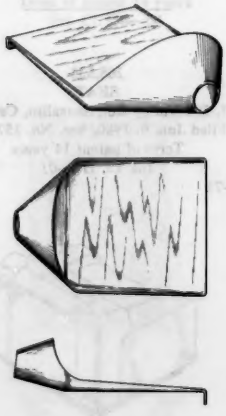
265,535
CHAIR FRAME
Gregory D. Bergquist, Mountain Brook, and John A. Jones, Trussville, both of Ala., assignors to Simmons Universal Corp., New York, N.Y.
Filed Sep. 24, 1980, Ser. No. 189,885
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



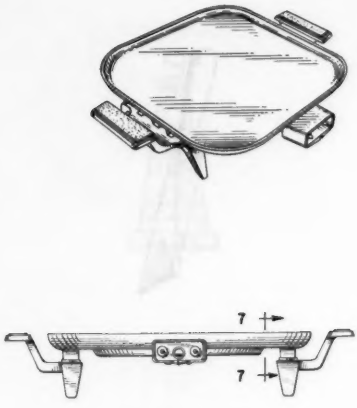
265,536
DRINKING GLASS
Sidney J. E. Turcotte, Jr., 115 Main St. E., Hamilton, Ontario, Canada L8N 1G5
Filed Jul. 30, 1979, Ser. No. 62,184
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—6



265,537
CUTTING BOARD AND FUNNEL UNIT
Robert S. Stockdale, P.O. Box 100, Nashota, Wis. 53058
Filed Sep. 19, 1980, Ser. No. 189,381
Term of patent 14 years
Int. Cl. D07—*04, 99*
U.S. Cl. D7—46

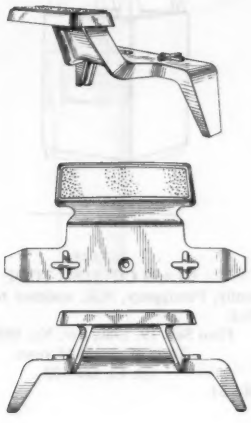


265,538
ELECTRIC GRIDDLE OR SIMILAR ARTICLE
Robert R. Nauheimer, LaGrange; William L. Lockett, Downers Grove, and George D. Meyer, Berkeley, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed May 30, 1980, Ser. No. 155,037
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—87

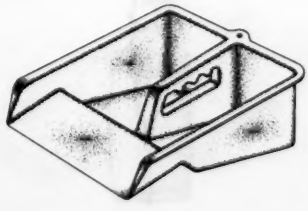


265,539
CHERRY PITTING MACHINE
Clement C. Pavelka, 376 Orange Dr., Oxnard, Calif. 93030
Filed Aug. 15, 1980, Ser. No. 178,025
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—106

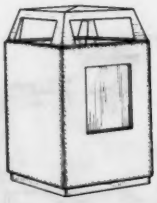
265,540
HANDLE FOR A COOKING OR HEATING UTENSIL
Steven R. Groner, Glen Ellyn, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed May 30, 1980, Ser. No. 155,805
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—132



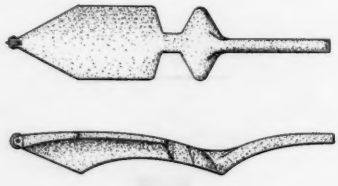
265,541
DEBRIS RECEPTACLE
Ronald L. Messenger, Auburn, and Gary M. Dodds, Grass Valley, both of Calif., assignors to Lucille W. Daniel, San Leandro, Calif.
Filed Mar. 4, 1980, Ser. No. 127,215
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—74



265,542
TRASH RECEPTACLE
Clive R. Hanson, Menlo Park, and Paul T. Hanson, Santa Cruz, both of Calif., assignors to Hanson Concrete Products, Inc., Milpitas, Calif.
Filed Apr. 7, 1978, Ser. No. 894,647
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D34—11



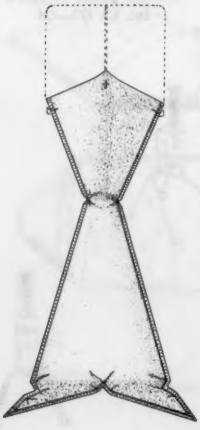
265,543
GLASS CUTTING TOOL
Peter Connolly, Parsippany, N.J., assignor to Red Devil Inc., Union, N.J.
Filed Sep. 19, 1980, Ser. No. 188,692
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—51



265,544
SCREWDRIVER
Gary C. Nelson, 8766 Cloud Leap Ct., Apt. #22, Columbia, Md. 21045
Filed Apr. 23, 1980, Ser. No. 143,018
Term of patent 14 years
Int. Cl. D8—*04*
U.S. Cl. D8—82

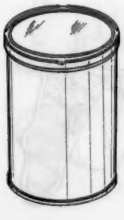
265,545
ELONGATE SANDING BLOCK
John T. Rueb, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jun. 20, 1980, Ser. No. 161,395
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—94

265,546
COLLECTION BAG FOR AN INSECT TRAP
James W. Seidenberger, Royersford, Pa., assignor to J. T. Baker Chemical Co., Phillipsburg, N.J.
Filed Mar. 5, 1979, Ser. No. 17,183
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—305

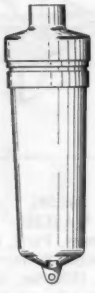


265,547
BOTTLE OR SIMILAR ARTICLE
Norwin H. Vogel, Rte. 4, Box 127A, Seguin, Tex. 78155
Filed Aug. 8, 1980, Ser. No. 176,396
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—322

265,548
PACKAGING DRUM FOR FOOD
Daniel G. Brundige, and Donald F. Freund, both of Macon, Ga., assignors to The Mead Corporation, Dayton, Ohio
Filed May 27, 1980, Ser. No. 153,395
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—352

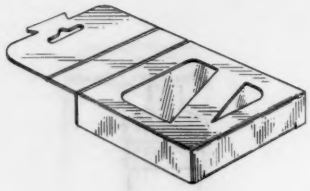


265,549
SHIPPING ENCLOSURE FOR CONNECTORIZED CABLE
Ronald C. Houts, Vadnais Heights, and William J. Seim, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Jul. 21, 1980, Ser. No. 170,832
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—371



265,550
BOTTLE
Richard C. Young, San Rafael, Calif., and Heather K. Parson, Mystic, Conn., assignors to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Apr. 21, 1980, Ser. No. 142,296
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—377

265,551
COMBINED DISPLAY AND PACKAGING CONTAINER
Debra Colby, Northbrook, and Nora Crane, Chicago, both of Ill., assignors to Amcam International, Inc., Northbrook, Ill.
Filed Aug. 11, 1980, Ser. No. 176,650
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—415



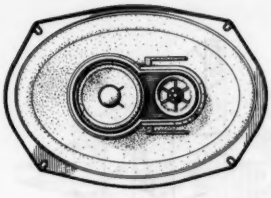
265,552
WATCH
Jean-Louis F. Dumas-Hermes, Paris, France, assignor to La Dumas Hermes S.A., Bienne, Switzerland
Filed Apr. 2, 1979, Ser. No. 26,433
Claims priority, application France, Oct. 4, 1978, 78 31813
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39

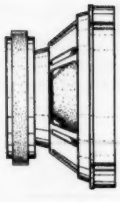
265,553
TIMING DEVICE
Michael S. Joss, Chicago, and Steven P. Belletire, Oak Park, both of Ill., assignors to AMF Incorporated, White Plains, N.Y.
Filed Apr. 4, 1980, Ser. No. 137,208
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D10—40

265,554
LAPEL PIN DOLL
Ann Lorion, 9005 Oak St., Pittsburgh, Pa. 15239
Filed Nov. 28, 1979, Ser. No. 98,367
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—53

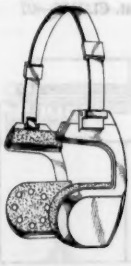
265,555
MEDALLION
Donald L. Donaldson, 7527 SW. 8th Ct., North Lauderdale, Fla. 33068
Filed May 12, 1980, Ser. No. 148,965
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D11—110

265,556
LOUDSPEAKER
Takekazu Iijima, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 5, 1980, Ser. No. 184,233
Claims priority, application Japan, Apr. 21, 1980, 55-15713
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—30

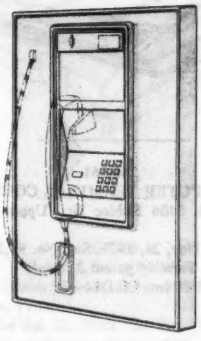




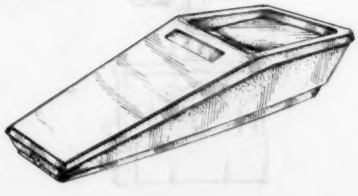
265,557
STEREO HEADPHONE
Joseph C. Besasie, Shorewood, Wis., assignor to Koss Corporation, Milwaukee, Wis.
Filed Dec. 12, 1980, Ser. No. 215,807
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—36



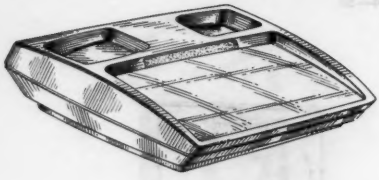
265,558
COIN TELEPHONE SET PANEL ENCLOSURE
George R. Fox, Holmdel; Herbert C. Illium, Jr., Asbury Park; Kenneth L. Korby, Red Bank, all of N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 22, 1980, Ser. No. 219,353
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—55



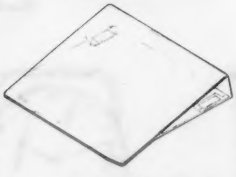
265,559
TELEPHONE INSTRUMENT BASE
George M. Janda, Wheaton, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.
Filed Dec. 29, 1980, Ser. No. 220,334
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60



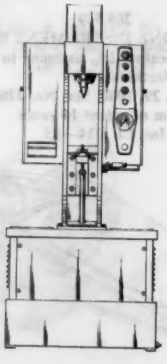
265,560
TELEPHONE STAND
George M. Janda, Wheaton, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.
Filed Dec. 29, 1980, Ser. No. 220,340
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60



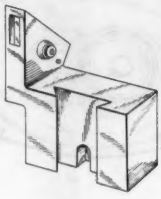
265,561
COMPUTER TERMINAL COVER
Samuel S. Cottrell, 5406 Roblee Dr., Upper Marlboro, Md. 20870
Filed Nov. 26, 1979, Ser. No. 97,217
Term of patent 3½ years
Int. Cl. D14—*02*
U.S. Cl. D14—114



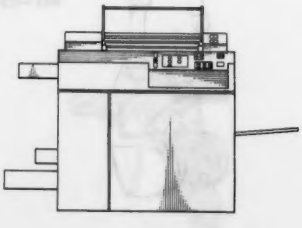
265,562
COMBINED HARDWARE PRESS AND PUNCH MACHINE
Virgil J. Haeger, 3081 Melchester Dr., San Jose, Calif. 95132
Filed Jun. 30, 1980, Ser. No. 164,075
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—128



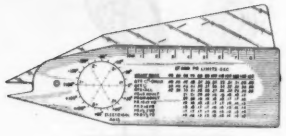
265,563
LATHE TOOL HOLDER
Howard A. Treloar, P.O. Box 86, Clarence Gardens, South Australia, Australia 5039
Filed Oct. 17, 1979, Ser. No. 85,515
Claims priority, application Australia, Apr. 23, 1979, 77676
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—140



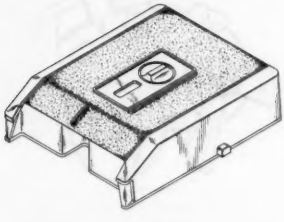
265,564
CONTINUOUS FORM FEEDING AND COPYING APPARATUS
R. Clark DuBois, Fairfield, and John C. Hamma, Milford, both of Conn., assignors to Gradco/Dendoki, Inc., Santa Ana, Calif.
Filed Sep. 22, 1980, Ser. No. 189,682
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—30



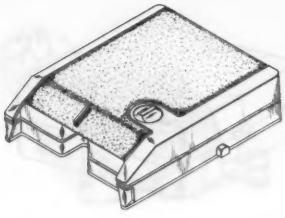
265,565
ELECTROCARDIOGRAM ANALYZER
Frank W. Jackson, II, Twillingate, R.D. 3, Mechanicsburg, Pa. 17055
Filed Jun. 23, 1980, Ser. No. 161,698
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—9



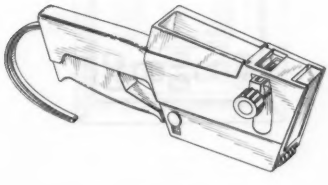
265,566
RIBBON CARTRIDGE
Cornelius W. Christie, Fulton, and Samuel D. Cappotto, Syracuse, both of N.Y., assignors to SCM Corporation, New York, N.Y.
Filed Sep. 29, 1980, Ser. No. 191,607
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—12



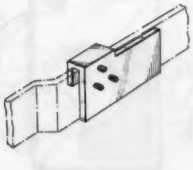
265,567
RIBBON CARTRIDGE
Cornelius W. Christie, Fulton, and Samuel D. Cappotto, Syracuse, both of N.Y., assignors to SCM Corporation, New York, N.Y.
Filed Sep. 29, 1980, Ser. No. 191,608
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—12



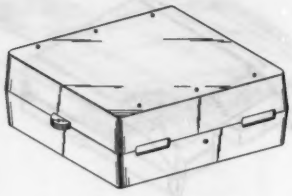
265,568
LABEL DISPENSER
Roger Kalifa, Toulouse, France, assignor to Erika International, S.A., Toulouse, France
Filed Jul. 25, 1980, Ser. No. 172,456
Claims priority, application France, Feb. 5, 1980, 800226
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D18—19



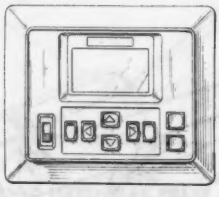
265,569
PAPER FEED CONTROL ADAPTER FOR A PRINTING PRESS
Ernest J. Prisbe, 12015-A Slauson Ave., Santa Fe Springs, Calif. 90670
Filed Oct. 6, 1980, Ser. No. 194,578
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—22



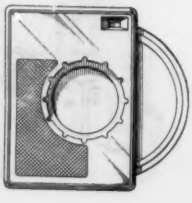
265,570
TRACING BOX
Maurice M. Moreau, 7215 Barnet Hwy., North Burnaby, British Columbia, Canada V5A 1E3
Filed Jul. 28, 1980, Ser. No. 172,872
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—52



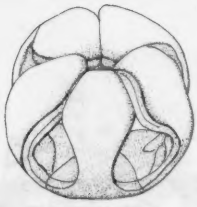
265,571
ELECTRONIC GAME HOUSING
Dietmar Nagel, Chester, N.J., assignor to Nagel/Kennedy & Associates, New York, N.Y.
Filed Jul. 28, 1980, Ser. No. 172,714
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



265,572
DRAWING INSTRUMENT
David Bredemeier, Rehoboth; William P. Richardson, South Easton, both of Mass., and Andre Cassagnes, Vitry sur Seine, France, assignors to Hasbro Industries, Inc., Pawtucket, R.I.
Filed Apr. 28, 1980, Ser. No. 144,996
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59



265,573
CLUTCH TOY
Ann P. Clarke, Keene, N.H., assignor to Douglas Company, Inc., Keene, N.H.
Filed Jun. 9, 1980, Ser. No. 157,972
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—65

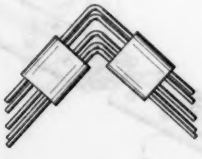


265,574
TOY AIRPLANE
Larry R. Nagode, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 12, 1981, Ser. No. 224,618
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—90

265,575
FRAME FOR PHYSICAL EXERCISE
Doneathia Lunford, 8831 5th Ave., Jacksonville, Fla. 32208
Filed Aug. 28, 1980, Ser. No. 182,032
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—191

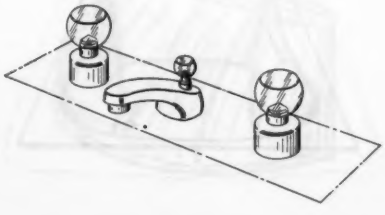
265,576
GOLF CLUB GRIP
Robert E. Lamkin, 5300 Lee St., Downers Grove, Ill. 60515, and Joseph P. Lamkin, 701 Acorn Hill La., Oakbrook, Ill. 60521
Filed Jul. 7, 1980, Ser. No. 166,614
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—222

265,577
TWISTING NOVELTY TOY
Donald L. Harmon, 308 Loma Vista, #6, El Segundo, Calif. 90245
Filed Oct. 10, 1980, Ser. No. 196,101
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—240

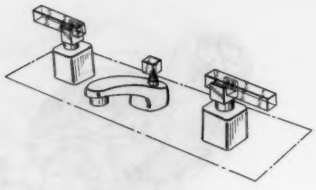


265,578
CHILDREN'S PLAY SPRINKLER
Richard L. Gillespie, San Gabriel; Douglas A. Geller, Monrovia, and David C. McElroy, South Pasadena, all of Calif., assignors to Wham-o Mfg. Co., San Gabriel, Calif.
Filed Apr. 20, 1981, Ser. No. 255,684
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—9

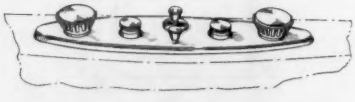
265,579
COMBINED SPOUT AND WATER CONTROL HANDLES
Stanley M. Paul, Rye, N.Y., assignor to American Standard Inc., New York, N.Y.
Filed Oct. 20, 1980, Ser. No. 198,389
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—25



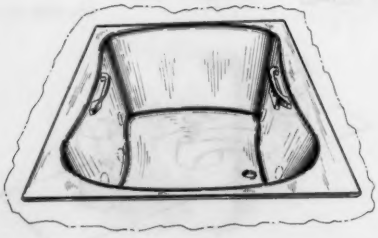
265,580
COMBINED SPOUT AND WATER CONTROL HANDLES
Stanley M. Paul, Rye, N.Y., assignor to American Standard Inc., New York, N.Y.
Filed Oct. 20, 1980, Ser. No. 198,387
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—25



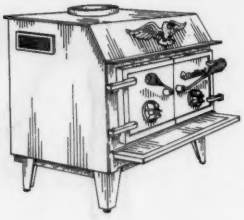
265,581
TUB CONTROL FITTING
Herbert V. Kohler, Jr., Kohler, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Mar. 25, 1981, Ser. No. 247,517
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—31



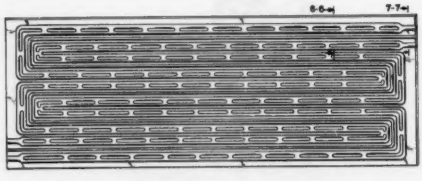
265,582
BATH TUB
Herbert V. Kohler, Jr., Kohler, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Mar. 25, 1981, Ser. No. 247,509
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



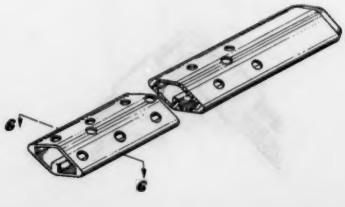
265,583
WOOD BURNING STOVE
Edmund P. Bullard, Sr., R.D. 2, Canastota, N.Y. 13032, and Gary A. Togni, 402 Palmer Dr., North Syracuse, N.Y. 13212
Filed Aug. 22, 1980, Ser. No. 180,499
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



265,584
THREE TUBE HEAT EXCHANGER PANEL
Sheldon H. Butt, and Charles A. Kleine, both of Godfrey, Ill., assignors to Olin Corporation, New Haven, Conn.
Filed Jan. 18, 1980, Ser. No. 113,365
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—136



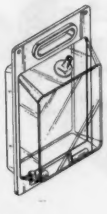
265,585
SURGICAL DRAIN
Gary P. East, and Rudolf R. Schulte, both of Santa Barbara, Calif., assignors to Pudenz Schulte Medical Research Corp., Santa Barbara, Calif.
Filed Jul. 28, 1980, Ser. No. 172,708
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—51



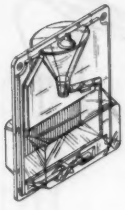
265,586
FUNNEL FOR COLLECTING URINE
Noah H. Sloan, 9801 Gross Point Rd., Skokie, Ill. 60076
Filed Jun. 19, 1980, Ser. No. 161,013
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—54

265,587
URINE COLLECTION DEVICE OR THE LIKE
Charles A. Lahay, Fayette, Ala., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Mar. 19, 1980, Ser. No. 131,601
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—59

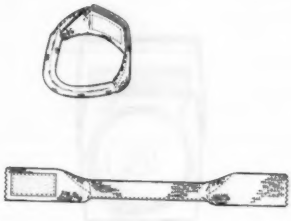
265,588
URINE COLLECTION DEVICE OR THE LIKE
Charles A. Lahay, Fayette, Ala., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Mar. 19, 1980, Ser. No. 131,602
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—59



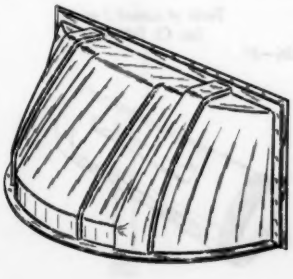
265,589
COMBINED URINE MONITOR AND COLLECTOR
Charles A. Lahay, Fayette, Ala., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Mar. 19, 1980, Ser. No. 131,604
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—59



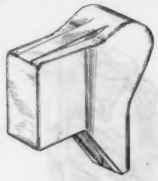
265,590
KNEE BRACE
George R. Gauvry, Hainesport, N.J., assignor to Cho-Pat, Inc., Hainesport, N.J.
Filed Jul. 21, 1980, Ser. No. 170,710
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64



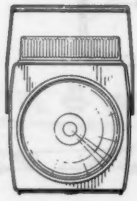
265,591
WINDOW WELL COVER
Thomas L. Kearnes, Akron, Ohio, assignor to Questor Corporation, Toledo, Ohio
Filed Sep. 29, 1980, Ser. No. 192,052
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—54



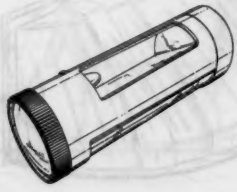
265,592
PROTECTIVE LADDER PAD
John H. Perkins, 101 Walden St., West Hartford, Conn. 06107
Filed Jun. 17, 1980, Ser. No. 160,379
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—68



265,593
BATTERY OPERATED LANTERN
Kittson Mann, Kowloon, Hong Kong, assignor to Chung Mei Metal and Plastic Factory, Ltd., Kowloon, Hong Kong
Filed Mar. 6, 1980, Ser. No. 127,893
Claims priority, application United Kingdom, Feb. 25, 1980, 993241
Term of patent 7 years
Int. Cl. D26—*02*
U.S. Cl. D26—37

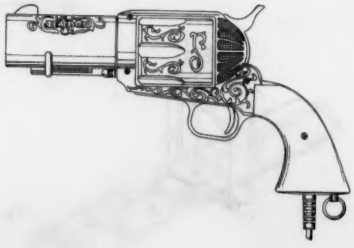


265,594
BATTERY OPERATED LANTERN
Kittson Mann, Kowloon, Hong Kong, assignor to Chung Mei Metal and Plastic Factory, Ltd., Kowloon, Hong Kong
Filed Mar. 24, 1980, Ser. No. 133,543
Claims priority, application United Kingdom, Feb. 22, 1980, 993749
Term of patent 7 years
Int. Cl. D26—*02*
U.S. Cl. D26—37

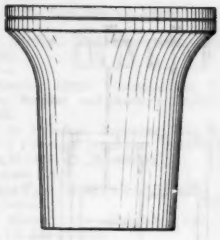


265,595
PIPE
Todd Galanter, 2729 N. Frederick Ave., Milwaukee, Wis. 53211
Filed Aug. 1, 1980, Ser. No. 174,702
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—03

265,596
HAIR DRYER
Jerald D. Garman, Dallas, Tex., assignor to Jerdon Industries, Inc., Richardson, Tex.
Filed Sep. 26, 1980, Ser. No. 191,162
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—13



265,597
HAIR DRYER ATTACHMENT
John R. Forsberg, Arlington Heights, Ill., assignor to Helene Curtis Industries, Inc., Chicago, Ill.
Filed Feb. 21, 1979, Ser. No. 13,261
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—18



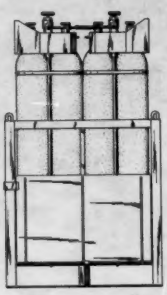
265,598
DIFFUSER FOR A HAIR DRYER
Dennis E. Radatz, La Grange Park, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jan. 11, 1980, Ser. No. 111,415
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—18

265,599
LIQUID DISPENSING COMB
Edmond J. Fitzpatrick, 1040 Lincoln Ave., Apt. D, Burbank, Calif. 91506
Filed Mar. 19, 1979, Ser. No. 22,070
Term of patent 3½ years
Int. Cl. D28—*03*
U.S. Cl. D28—25

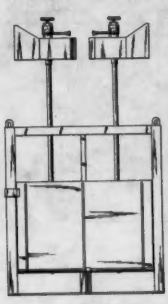
265,600
LIPSTICK CASE
Pierre Ballereaud, 4 bis, route d'Ormoy, 28360 Dammarie, France
Filed Jun. 27, 1980, Ser. No. 163,423
Claims priority, application Switzerland, Dec. 31, 1979, 69763
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D28—88

265,601
COMBINED PAINT PADDLE AND SCRAPER TOOL
Sven O. Olsson, 7951 Chicago Ave. South, Minneapolis, Minn. 55420
Filed Mar. 14, 1980, Ser. No. 130,544
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—49

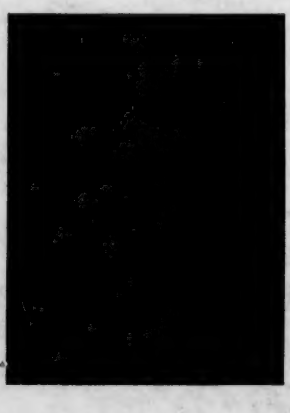
265,602
COMBINED GAS CYLINDERS AND SUPPORT FRAME FOR TRANSPORT AND HANDLING THEREOF
Bengt G. Winqvist, Esbo, Finland, assignor to AGA Aktiebolag, Lidingo, Sweden
Filed May 20, 1980, Ser. No. 151,751
Claims priority, application Sweden, Feb. 13, 1980, 80-0308
Term of patent 14 years
Int. Cl. D9—*08*
U.S. Cl. D34—28



265,603
SUPPORT FRAME FOR TRANSPORT AND HANDLING OF GAS CYLINDERS
Bengt G. Winqvist, Esbo, Finland, assignor to AGA Aktiebolag, Lidingo, Sweden
Filed May 20, 1980, Ser. No. 151,752
Claims priority, application Sweden, Feb. 13, 1980, 80-0308
Term of patent 14 years
Int. Cl. D9—*08*
U.S. Cl. D34—28



265,604
LAMINATE SHEET
Ichiro Saito, Tokyo, Japan, assignor to Formica Corporation, Wayne, N.J.
Filed Feb. 9, 1979, Ser. No. 11,016
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—25



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF JULY, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Nattermann & Cie. GmbH: *See*—
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A.R.D. Anstalt: *See*—
Gabr, Saad Z. M., 4,342,002, Cl. 330-65.000.

AB Leo: *See*—
Sundstrom, Staffan; and Herlestam, Tore, 4,341,948, Cl. 219-521.000.

Abate, Leo: *See*—
Schaller, Maurice; Debs, Victor; Abate, Leo; Dodich, James; Rodriguez, Regino; and Anderle, Joseph A., 4,341,254, Cl. 160-172.000.

Abbes, Claude; de Villepoix, Raymond; and Rouaud, Christian, to Commissariat a l'Energie Atomique. Pipe coupling comprising a chain collar. 4,341,406, Cl. 285-408.000.

Abbott Laboratories: *See*—
Voss, Houston F., 4,341,865, Cl. 435-7.000.

Abe, Haruhiko: *See*—
Nagatomo, Masao; Abe, Haruhiko; and Mizuguchi, Kazuo, 4,341,616, Cl. 204-298.000.

Abe, Masanori: *See*—
Morimura, Hiroaki; and Abe, Masanori, 4,341,397, Cl. 280-688.000.

Abel, Heinz, to Ciba-Geigy Corporation. Foam inhibitors and their use for defoaming aqueous systems. 4,341,656, Cl. 252-321.000.

Abo, Toshimi; and Kanegae, Hidetoshi, to Nissan Motor Company, Limited. Fuel control system for a gas turbine. 4,341,071, Cl. 60-39.14R.

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Acevedo, Ignacio. Torque-applying, freely-reversible tool and drive-handle coupling with direction of torque-application selection. 4,341,293, Cl. 192-43.000.

ACF Industries, Incorporated: *See*—
Meyer, Danny S., 4,341,369, Cl. 251-168.000.

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Nakahata, Kimio; Tanigawa, Koichi; and Adachi, Hiroyuki, 4,341,457, Cl. 355-3.0CH.

Adachi, Toshio; and Hiratake, Susumu, to Daidotokushuko Kabushikikaisha. Apparatus for filling of container with radioactive solid wastes. 4,341,915, Cl. 373-22.000.

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Bernardis, Francesco; Adamoli, Contardo; and Cretaz, Franco, 4,341,478, Cl. 400-124.000.

Adams, Arthur C.; and Levinstein, Hyman J., to Bell Telephone Laboratories, Incorporated. Method for producing silicon dioxide/polycrystalline silicon interfaces. 4,341,818, Cl. 427-85.000.

Adamson, Joseph W.; and Corr, Clifford W., to Fiat-Allis Construction Machinery, Inc. Perforated hood with air scoop. 4,341,277, Cl. 180-54.00A.

Adib, Freydoon, to Myo-Tronics, Inc. Compensating system for kinesiograph mandibular tracker. 4,342,086, Cl. 364-415.000.

Advanced Micro Devices, Inc.: *See*—
Kim, Kyoung, 4,342,045, Cl. 357-41.000.

Aga, Takashi: *See*—
Hirano, Takashi; and Aga, Takashi, 4,341,274, Cl. 177-25.000.

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Royer, Rene R.; and Buisson, Jean-Pierre, 4,341,794, Cl. 424-285.000.

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Okuo, Takayasu; Masaki, Takaki; and Kobayashi, Keisuke, 4,341,965, Cl. 310-11.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Koepke, Gunther; Frenken, Hans; and Friedsam, Josef, 4,341,642, Cl. 210-767.000.

Agfa-Gevaert, N.V.: *See*—
Vandewalle, Jan J.; Monbaliu, Marcel J.; and Van Poucke, Raphael K., 4,341,864, Cl. 430-505.000.

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Mackrle, Svatopluk; and Novotny, Milos, 4,341,630, Cl. 210-221.200.

Agyagos, Ferenc I. Multipurpose exerciser device. 4,341,378, Cl. 272-62.000.

Ahlbeck, Richard A., to N-Viro Energy Systems, Ltd. Lightweight aggregate. 4,341,562, Cl. 106-97.000.

Ahmed, Myrna M.: *See*—
Ahmed, Nazeer; and Ahmed, Myrna M., 4,341,580, Cl. 156-190.000.

Ahmed, Nazeer; and Ahmed, Myrna M. Method of forming an elongated composite laminate tube. 4,341,580, Cl. 156-190.000.

Ahrens, Paul W., to Miracle Recreation Equipment Company. Seesaw. 4,341,377, Cl. 272-54.000.

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Milligan, Barton; and Pinschmidt, Robert K., Jr., 4,341,898, Cl. 560-24.000.

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Fushimi, Takehiko; Kawai, Shinji; and Kuwana, Kazutaka, 4,340,980, Cl. 4-448.000.

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Akamatsu, Takeshi: *See*—
Nakamura, Osamu; Akamatsu, Takeshi; and Goto, Junjiro, 4,341,542, Cl. 65-17.000.

Aktiebolaget Hassle: *See*—
Bogentoft, Conny B.; and Appelgren, Curt H., 4,341,759, Cl. 424-21.000.

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Poteat, Dewey E., 4,341,095, Cl. 66-177.000.

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Simpson, Victor J., 4,341,346, Cl. 237-70.000.

Alcan Research and Development Limited: *See*—
Breen, Nixon B., 4,341,944, Cl. 219-123.000.

Alekhin, Stanislav A.; Bakhir, Vitold M.; and Born, Raisa I. Method and apparatus for monitoring structural and mechanical properties of drilling mud. 4,341,115, Cl. 73-153.000.

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Alfa Farmaceutici S.p.A.: *See*—
Marchi, Egidio; and Montecchi, Lauretta, 4,341,785, Cl. 424-256.000.

Allardt, Clark E.: *See*—
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Passey, Douglas A.; and Jerva, Ronald E., 4,342,077, Cl. 364-183.000.

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Berry, William W.; and Allen, Hanceford L., 4,341,638, Cl. 210-666.000.

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Deconinck, Didier, 4,341,417, Cl. 297-24.000.

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Thomas, Rudy V., 4,341,399, Cl. 280-802.000.

Allied Paper Incorporated: *See*—
Shaw, Michael J.; and Thiessen, Robert J., 4,341,839, Cl. 428-342.000.

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Canup, Robert E.; and Alperstein, Martin, 4,341,196, Cl. 123-643.000.

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Hanlet, Jacques M., 4,341,976, Cl. 313-210.000.

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Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., to Pfizer Inc. 1,9-Dihydroxyoctahydrophenanthrenes. 4,341,906, Cl. 568-328.000.

Aluminum Company of America: *See*—
Ellis, Darwin L., 4,341,498, Cl. 413-3.000.

Ambli, Nils, to Kvaerner Brug A/S. Wave energy power station. 4,341,959, Cl. 290-53.000.

American Cyanamid Company: *See*—
Dauplaise, David L.; and Nagaraj, D. R., 4,341,626, Cl. 209-166.000.
Sassiver, Martin L.; and Boothe, James H., 4,341,703, Cl. 260-239.100.
Seifried, Paul E., 4,341,735, Cl. 422-66.000.

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Kim, Dong H.; and Bell, Stanley C., 4,341,718, Cl. 260-501.180.

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Hennick, Robert P., 4,341,995, Cl. 324-161.000.

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Martenson, Irvin W., 4,341,565, Cl. 106-307.000.

American Safety Razor Company: *See*—
Lightsey, Martin F., 4,341,306, Cl. 206-372.000.

Ametek, Inc.: *See*—
Bowen, John C., 4,341,200, Cl. 126-417.000.
AMP Incorporated: *See*—
Bright, Edward J.; Engle, Glenn A.; and Scheingold, William S., 4,341,429, Cl. 339-74.00R.
Cherian, Gabriel B.; Scheingold, William S.; and Youngfleish, Frank C., 4,341,433, Cl. 339-176.0MP.
Crawford, Christopher L., 4,341,430, Cl. 339-99.00R.
Woratyla, John A., 4,341,431, Cl. 339-103.00M.
Analytical Radiation Corporation: *See*—
Wieder, Irwin, 4,341,957, Cl. 250-461.200.
Anderle, Joseph A.: *See*—
Schaller, Maurice; Debs, Victor; Abate, Leo; Dodich, James; Rodriguez, Regino; and Anderle, Joseph A., 4,341,254, Cl. 160-172.000.
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Anderson, Iain; Benjamin, Ralph; and Morgan, Thomas R., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Frequency compensating reflector antenna. 4,342,035, Cl. 343-792.500.
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Anderson, Weston A., to Diasonics Cardio/Imaging, Inc. Ultrasonic volume measuring system. 4,341,120, Cl. 73-618.000.
Andersson, Arne; Emanuelsson, Jan; Johansson, Ingemar; and Wahlen, Svante, to Rockwool AB. Fibrous material having good dimensional and heat stability. 4,341,597, Cl. 162-127.000.
Andrus, Ronald L.; Reade, Richard F., deceased; and by Reade, Clara M., administratrix, to Corning Glass Works. Method of making strengthened transparent glass-ceramic, partially body-crystallized, and surface-crystallized glass articles. 4,341,543, Cl. 65-30.100.
Angerer, Reinhold: *See*—
Scheurecker, Werner; Wirth, Josef; and Angerer, Reinhold, 4,341,257, Cl. 164-150.000.
Anritsu Electric Company Limited: *See*—
Kawasaki, Tetsuro; and Toda, Hiromichi, 4,341,994, Cl. 324-132.000.
Antos, George J., to UOP Inc. Hydrocarbon dehydrogenation with an attenuated superactive multimetallic catalytic composite for use therein. 4,341,664, Cl. 252-466.0PT.
Anttila, Antero, to OY. Tampella AB. Rock drilling method. 4,341,271, Cl. 175-24.000.
Anuta, David A., to Zimmer, Inc. Low viscosity bone cement. 4,341,691, Cl. 523-116.000.
Aoki, Bunya: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,341,776, Cl. 424-246.000.
Aoki, Nanao, to Fuji Photo Film Co., Ltd. Photograph film unit. 4,341,857, Cl. 430-207.000.
Aoki, Takao; Miyakoshi, Hideo; Hirasawa, Yoshihei; and Nishii, Yasuo, to Chugai Seiyaku Kabushiki Kaisha. Method for suppressing abnormal rise in immunological function and agent useful therefor. 4,341,774, Cl. 424-236.000.
Appelgren, Curt H.: *See*—
Bogentoft, Conny B.; and Appelgren, Curt H., 4,341,759, Cl. 424-21.000.
Apple, Theodore S.: *See*—
Phillipp, Robert G.; Apple, Theodore S.; and Ernest, Paul W., 4,341,975, Cl. 313-25.000.
Appleby, Robert H.; and Cove, Peter L., to Titus Tool Company Limited. Joining device. 4,341,485, Cl. 403-231.000.
Aptec Corporation: *See*—
French, Roger F., 4,341,202, Cl. 126-433.000.
Arai, Toshio: *See*—
Kashiwagi, Kazuo; Arai, Toshio; Toda, Takao; Shirai, Masanari; and Yanagi, Masaaki, 4,341,463, Cl. 355-14.0CH.
Arai, Yasuyuki: *See*—
Imai, Kunio; Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,341,838, Cl. 428-338.000.
Arbabian, Morteza. Waste water heat recovery apparatus. 4,341,263, Cl. 165-40.000.
Arco Industries Ltd.: *See*—
Tsui, Kwok W.; and Yuen, Sing C. J., 4,341,034, Cl. 46-14.000.
Armco Inc.: *See*—
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Orlowski, Gerald J.; and Dugle, Thomas E., 4,341,154, Cl. 100-194.000.
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Arnold, Emmons S., deceased, 4,341,338, Cl. 229-23.0BT.
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Arntzen, Huguette C. Method and apparatus for covering books. 4,341,401, Cl. 281-34.000.
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Atkinson, Gordon E., to Vernay Laboratories, Inc. Combination check-overpressure relief valve. 4,341,239, Cl. 137-493.000.
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Auinger, Herbert, to Siemens Aktiengesellschaft. Three phase winding for high voltage machines with y-connected phases. 4,341,970, Cl. 310-184.000.
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Bachot, Jean; and Grosbois, Jean, to Chloe Chimie. Diaphragm for electrolysis and process for the preparation thereof. 4,341,615, Cl. 204-296.000.
Backlund, Anders D. Method and a device for energy conversion. 4,341,075, Cl. 60-531.000.
Baermann, Max. Device for automatically controlling the braking force of an eddy current and/or friction track brake. 4,341,290, Cl. 188-165.000.
Bagby, Thomas L.; Demeny, Gary L.; and Smead, Robert G., to Caterpillar Tractor Co. Method of electrostatically coating an article with paint. 4,341,815, Cl. 427-33.000.
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Baker, Philip G.; and Matthews, Gerald L., to Polaroid Corporation. Self-developing photographic apparatus with multiple timers. 4,341,454, Cl. 354-304.000.
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Bando, Niro, to Kubota, Ltd. System of changing travelling speed of working vehicle. 4,341,129, Cl. 74-481.000.
Banks, George W. High pressure, three stage, balanced valve. 4,341,370, Cl. 251-282.000.
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Barnish, Ian T.; and Cross, Peter E., to Pfizer Inc. Heterobicyclic keto- and amino-acids, esters and amides. 4,341,792, Cl. 424-275.000.
Baron, Kenneth; and McArthur, Dennis P., to Union Oil Company of California. Catalysts for reducing CO and SO_x emissions from catalytic cracking units. 4,341,661, Cl. 252-455.00Z.
Barrett, Wayne T.; and Brown, Patrick M., to Foote Mineral Co. Eutectic mixture as a flux for glass melts. 4,341,566, Cl. 106-313.000.
Barry Wright Corporation: *See*—
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Bartholomew, Robert F.; Garbarino, Paul L.; Gardiner, James R.; Revitz, Martin; and Shepard, Joseph F., to International Business Machines Corporation. Method for making an electrical contact to a silicon substrate through a relatively thin layer of silicon dioxide on the surface of the substrate. 4,341,009, Cl. 29-571.000.
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Schneider, Gottfried; Wagner, Kuno; and Muller, Hanns P., 4,341,909, Cl. 568-863.000.
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Beckerman, Howard L.; and Pepe, Russell J., to Singer Company, The. Pattern display arrangement for an electronically controlled sewing machine. 4,341,170, Cl. 112-158.00E.
Beckert, Werner F.; Barber, William H.; Bowen, Richard E.; and Dengel, Ottmar H., to United States of America, Navy. Compositions and methods for generation of gases containing hydrogen or hydrogen isotopes. 4,341,651, Cl. 252-188.250.
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Beiersdorf Aktiengesellschaft: *See*—
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Belanger, Patrice C.; and Young, Robert N., to Merck & Co., Inc. Derivatives of 2-hydroxy-6,9-methano-11-amino-5,6,7,8,9,10-hexahydro-benzocyclooctene. 4,341,904, Cl. 564-427.000.
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Bendix Corporation, The: *See*—
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Bertolacini, Ralph J.; and Forsythe, William L., Jr., to Standard Oil Company (Indiana). Catalytic cracking using a mixture of cracking catalyst particles with particles of platinum group metal or rhenium on inert substrates regenerated to up to about 0.1% coke. 4,341,623, Cl. 208-113.000.
Bertolacini, Ralph J.; and Forsythe, William L., Jr., to Standard Oil Company (Indiana). Catalytic cracking catalyst. 4,341,660, Cl. 252-455.00Z.
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Betts, Max W.; Burrow, Thomas R.; Robinson, Frank; and White, Patrick A., to Courtaulds Limited. Composite structure in the form of a disc of knitted carbon fibers. 4,341,830, Cl. 428-65.000.
Betzing, Hans; Biedermann, Jurgen; Materne, Carsten; and Neuser, Volker, to A. Nattermann & Cie. GmbH. Pyrrolidinylalkylcarboxylic acid amide derivatives, their preparation and pharmaceutical compositions containing them. 4,341,790, Cl. 424-274.000.
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Betzing, Hans; Biedermann, Jurgen; Materne, Carsten; and Neuser, Volker, 4,341,790, Cl. 424-274.000.
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Bird, James M., to Industrial Vehicles International Inc. Carrier vehicle for seismic vibrational system. 4,341,282, Cl. 181-114.000.

Bisschops, Yvan; Draguez Tripels de Hault, Emmanuel; Jnoff, Aleksef; and Delaby, Alain, to Lilachim. Quaternary ammonium salt mixtures. 4,341,644, Cl. 252-8.800.

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Blair, Charles M., Jr., to Magna Corporation. Method of recovering petroleum from a subterranean reservoir incorporating a polyether polyol. 4,341,265, Cl. 166-274.000.

Blair, Richard F.; and Beazley, Ralph, to Tylan Corporation. Calibratable system for measuring fluid flow. 4,341,107, Cl. 73-3.000.

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Blattel, Steven R.; and Hilscher, Larry W., to NL Industries, Inc. Aqueous drilling and packer fluids. 4,341,645, Cl. 252-8.50C.

Blevins, Paul. Tamperproof dead bolt device. 4,341,408, Cl. 292-150.000.

Bloch, Moshe R.; Sasson, Joel; Ginzburg, Margaret E.; Goldman, Zvi; Ginzburg, Ben Z.; Garti, Nissim; and Porath, Asher. Oil products from algae. 4,341,038, Cl. 47-1.400.

Block, Philip M. Percolation testing method and apparatus. 4,341,110, Cl. 73-38.000.

Bloomfield, Dennis G., to Steetley Engineering Limited. Explosion relief means. 4,341,041, Cl. 49-141.000.

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Bloxsom, Dan E. Solar energy collector. 4,341,203, Cl. 126-440.000.

Bloxsom, Dan E. Solar energy collector. 4,341,204, Cl. 126-440.000.

Boa, Walter; and Grundon, Peter M., to National Research Development Corporation. Block handling apparatus. 4,341,333, Cl. 225-96.000.

Bochtler, Eugen: *See*—
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Bogentoft, Conny B.; and Appelgren, Curt H., to Aktiebolaget Hassle. Granule having controlled release properties. 4,341,759, Cl. 424-21.000.

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Bohm, Wolfgang; Wolmer, Roger; Szulczyk, Andreas; and Malikowski, Willi, to Degussa - Aktiengesellschaft. Material for electrical contacts. 4,341,556, Cl. 75-173.00A.

Bolze, Manfred; and Drawert, Manfred, to Schering AG. Polyester amide melt adhesives. 4,341,671, Cl. 528-324.000.

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Bonn, John W., to CVI Incorporated. Cryopump apparatus. 4,341,079, Cl. 62-55.500.

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Borden, Raymond W.; and DeBard, James E., to Bendix Corporation, The. Support means for high-temperature generator stators. 4,341,968, Cl. 310-91.000.

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Born, Raisa I.: *See*—
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Borostyan, Stephen: *See*—
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Borrelli, Nicholas F.; Whitman, Arthur J.; and Young, Peter L., to Corning Glass Works. Archival optical recording medium. 4,341,863, Cl. 430-346.000.

Borrows, Kenneth P., to Magnaflux Corporation. Magnetic particle inspection process useable with simultaneous illumination by ultraviolet and white light. 4,341,997, Cl. 324-215.000.

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Bosch-Siemens Hausgerate GmbH: *See*—
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Bossard, Ronald G.; and Goodin, Robert B., to Minnesota Mining and Manufacturing Company. Strain-relief brace for cable splice case. 4,341,922, Cl. 174-92.000.

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Bowen, John C., to Ametek, Inc. Solar energy collector sub-assemblies and combinations thereof. 4,341,200, Cl. 126-417.000.

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Bowler, Lauren L., to General Motors Corporation. Low pressure throttle body injection apparatus. 4,341,193, Cl. 123-472.000.

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Braeger, Horst, to Nordischer Maschinenbau Rud. Baader GmbH and Co Kg. Apparatus for skinning fish. 4,340,995, Cl. 17-62.000.

Brainard, William A.; and Wheeler, Donald R., to United States of America, National Aeronautics and Space Administration. Refractory coatings. 4,341,843, Cl. 428-457.000.

Braksmayer, Diza P.; and Hussain, Syed N., to FMC Corporation. Tris-(3-hydroxyalkyl) phosphine oxide flame retardant compositions. 4,341,696, Cl. 524-139.000.

Brandt Company, The: *See*—
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Braun, Anton. Hermetic seal for compressors or the like. 4,341,507, Cl. 417-364.000.

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Braun, Dieter; and Hubner, Peter-Michael, to Westfalia-Werke Franz Knobel & Sohne KG. Vehicle having at least two rows of tandem seats. 4,341,415, Cl. 296-65.00R.

Braun, John: *See*—
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Bravo, Sergio M. Gasoline pump reset lever lock apparatus. 4,341,326, Cl. 222-32.000.

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Breiter, Manfred W.: *See*—
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Bremer, Robert C., Jr.: *See*—
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Brennan, John J.: *See*—
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Bretl, Wayne E.: *See*—
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Bretz, Karl-Heinz: *See*—
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Briffod, Jean-Paul; Martin, Roland; Pfau, Jean; Bommeli, Bernard; and Schnellmann, Danielle, to Ateliers des Charmilles, S.A. Wire electrode for cutting an electrode workpiece by electrical discharges. 4,341,939, Cl. 219-69.00W.

Bright, Edward J.; Engle, Glenn A.; and Scheingold, William S., to AMP Incorporated. Electrical connector. 4,341,429, Cl. 339-74.00R.

Brison, Robert J.; and Webber, Michael E., to Stauffer Chemical Company. Soda ash production. 4,341,744, Cl. 423-206.00T.

Bristol-Myers Company: *See*—
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Britt, James M.; and Logue, Charles C., to Babcock & Wilcox Company, The. Foamed insulating refractory. 4,341,561, Cl. 106-87.000.

Britt, John P., to Pinna Corporation. Frangible strip of clips. 4,341,303, Cl. 206-343.000.

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Brodie, Ivor: *See*—
Mooney, John B.; and Brodie, Ivor, 4,341,851, Cl. 430-56.000.

Brodoff, Bernard. Settling tanks for waste disposal. 4,341,643, Cl. 210-803.000.

Brokke, Mervin E.: *See*—
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Browder, George B., to United States of America, Navy. Servo control system for the positioning of an apparatus. 4,341,986, Cl. 318-618.000.
Brown, James M., Jr.: *See*—
Critchell, Kenneth G.; and Brown, James M., Jr., 4,341,248, Cl. 144-378.000.
Brown, Keith. Visible information management system. 4,341,028, Cl. 40-534.000.
Brown, Patrick M.: *See*—
Barrett, Wayne T.; and Brown, Patrick M., 4,341,566, Cl. 106-313.000.
Brown, Paul J.; Dugan, Robert J.; Guyette, Richard R.; and Strong, David L., to International Business Machines Corp. Program instruction mechanism for shortened recursive handling of interruptions. 4,342,082, Cl. 364-200.000.
Brown, Steven L.: *See*—
Stevens, Don L., Jr.; Brown, Steven L.; Malone, John A.; Knowles, Timothy A.; and Webb, Thomas G., 4,341,174, Cl. 114-45.000.
Brownlee, Richard T.; Scotten, Lawrence N.; and Walker, David K. Catenary mitral valve replacement. 4,340,977, Cl. 3-1.500.
Brunsting, Albert; Hogg, Walter R.; and Newton, William A., to Coulter Electronics, Inc. Reflector optics with impedance sensing orifice. 4,341,993, Cl. 324-71.0CP.
Brunsting, Albert: *See*—
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Brunswick Corporation: *See*—
Baker, Joseph W., 4,341,241, Cl. 137-554.000.
BSD Corporation: *See*—
Turner, Paul F., 4,341,227, Cl. 128-804.000.
Buchwalter, Stephen L.: *See*—
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Buechel, Frederick F.; and Pappas, Michael J., to Biomedical Engineering Corp. New Jersey meniscal bearing knee replacement. 4,340,978, Cl. 3-1.911.
Buff, Paul C., to Valley People, Inc. Electronic gain control device. 4,341,962, Cl. 307-492.000.
Buisson, Jean-Pierre: *See*—
Royer, Rene R.; and Buisson, Jean-Pierre, 4,341,794, Cl. 424-285.000.
Bull, Dale L.; and Rautiola, Norman A., to Nartron Corporation, a part interest. Lamp housing. 4,342,074, Cl. 362-365.000.
Bunge, John M. Insulating vessel. 4,341,316, Cl. 215-13.00R.
Burdick, Clayton J. Continuously variable ratio power transmission. 4,341,132, Cl. 74-687.000.
Buren, Lawrence L.: *See*—
Large, George B.; and Buren, Lawrence L., 4,341,549, Cl. 71-86.000.
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Burgel AG: *See*—
Saladin, Josef, 4,341,475, Cl. 366-211.000.
Burger, Herbert. Method and apparatus for degassing the pressure fluid of a hydraulic system. 4,341,334, Cl. 55-55.000.
Burgess, Anthony J.; and Gardner, David L., to Imperial Chemical Industries Limited. Vinylidene chloride co-polymer latex compositions. 4,341,679, Cl. 524-833.000.
Buriks, Rudolf S.; and Lovett, Eva G., to Petrolite Corporation. Azetidinium salts and polymers and copolymers thereof. 4,341,887, Cl. 526-263.000.
Burke Mills, Inc.: *See*—
Shaikh, Humayun N., 4,341,361, Cl. 245-130.400.
Burkel, Russell J., to Realist, Inc. Microfiche reading carrel. 4,341,446, Cl. 353-77.000.
Burns, Edward J.; and White, Geoffrey T., to InterNorth, Inc. Energy storage medium and method. 4,341,649, Cl. 252-70.000.
Burns, Lyle D., to Phillips Petroleum Company. Motor fuel. 4,341,529, Cl. 44-63.000.
Burroughs Corporation: *See*—
Fedder, Richard C., 4,341,455, Cl. 355-3.0TR.
Hanson, Lawrence G., 4,342,026, Cl. 340-347.0DD.
Hanson, Lawrence G., 4,342,027, Cl. 340-347.0DD.
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Matthewson, Michael D., 4,341,760, Cl. 424-45.000.
Snary, David, 4,341,697, Cl. 260-112.00R.
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Busko-Oszczapowicz, Irena: *See*—
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Busson, Donald G., to United States of America, Director, National Security Agency, U.S. Government. Digital bridging apparatus for telephone conferencing system. 4,342,111, Cl. 370-62.000.
Butts, Orville R., to Roper Corporation. Prompting control. 4,341,197, Cl. 126-39.0BA.
Buxbaum, Lothar, to Ciba-Geigy Corporation. Oligomeric epoxide resins and their use as flameproofing agents. 4,341,693, Cl. 524-93.000.
Byrd, Carlisle O., Jr.; and Hounsel, Mack A., to Manville Service Corporation. Electric furnace insulation module. 4,341,916, Cl. 373-128.000.
Byrne, Martin A.: *See*—
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C. H. Boehringer Sohn: *See*—
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; Hoefke, Wolfgang; Gaida, Wolfram; Streller, Ilse; and Fugner, Armin, 4,341,778, Cl. 424-248.500.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Hoefke, Wolfgang; and Pichler, Ludwig, 4,341,788, Cl. 424-273.00R.
Cabeza, Maximino R. Simultaneous connection between handlebar and steering fork of bicycles. 4,341,394, Cl. 280-279.000.
Caccoma, George A.; Koestner, Joseph H.; O'Neill, Brian C.; and Tappen, Frank M., to International Business Machines Corp. Batch chip placement system. 4,342,090, Cl. 364-491.000.
Calandritti, Biagio: *See*—
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Calandritti, Rosario; and Calandritti, Biagio. Security system including a revolving door. 4,341,165, Cl. 109-8.000.
Calcagno, Benedetto; Sartorio, Emanuele; Divo, Claudio; and Verde, Luigi, to Euteco Impianti S.p.A. Process for the production of cumene. 4,341,913, Cl. 585-449.000.
Calderara, Reto, to Kistler Instrumente AG. Piezoelectric crystal element for use in force, pressure and acceleration transducers. 4,341,974, Cl. 310-360.000.
Callahan, James L.; Hardman, Harley F.; and Milberger, Ernest C., to Standard Oil Company, The. Reactor for contacting gases and a particulate solid. 4,341,717, Cl. 260-465.300.
Calundann, Gordon W.: *See*—
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Cameron Iron Works, Inc.: *See*—
Cox, Fern H.; and Rosenhauch, Irwin, 4,341,264, Cl. 166-55.000.
Canadian Patents & Dev. Ltd.: *See*—
Thomson, Robert; and Emmett, John R., 4,341,261, Cl. 164-475.000.
Canon Kabushiki Kaisha: *See*—
Hosono, Nagao; and Kanbe, Junichiro, 4,341,179, Cl. 118-658.000.
Kashiwagi, Kazuo; Arai, Toshio; Toda, Takao; Shirai, Masanari; and Yanagi, Masaaki, 4,341,463, Cl. 355-14.0CH.
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Nakahata, Kimio; Tanigawa, Koichi; and Adachi, Hiroyuki, 4,341,457, Cl. 355-3.0CH.
Sakai, Shinji; Shinoda, Nobuhiko; Kinoshita, Takao; Kawabata, Takashi; Kitagishi, Nozomu; Hosoe, Kazuya; and Ito, Tadashi, 4,341,953, Cl. 250-204.000.
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Cantley, Ross H. Safe storage box. 4,341,166, Cl. 109-53.000.
Canup, Robert E.; and Alperstein, Martin, to Texaco Inc. Ignition initiating signal from a fuel injection nozzle valve. 4,341,196, Cl. 123-643.000.
Carduner, M. Jean J.: *See*—
Decouzon, M. Georges; and Carduner, M. Jean J., 4,341,396, Cl. 280-666.000.
Careatti, John A.: *See*—
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Carl Zeiss-Stiftung: *See*—
Lang, Walter; Muller, Ortwin; and Neidlinger, Alfons, 4,341,435, Cl. 350-35.000.
Carlisle Corporation: *See*—
Harlow, Norman R., 4,341,509, Cl. 425-114.000.
Carlson, Richard O.; and Yerman, Alexander J., to General Electric Company. Method of restoring semiconductor device performance. 4,341,594, Cl. 156-643.000.
Carpenter, Gary J.; and Radi, Gabor L., to Western Gear Corporation. Seat pallet lock. 4,341,496, Cl. 410-79.000.
Carr, Albert A.; Farr, Robert A.; and Kane, John M., to Richardson-Merrell Inc. Enkaphalin derivatives. 4,341,698, Cl. 260-112.50R.
Carr, David L.: *See*—
Morrison, Edward D.; Krall, Harry J.; Carr, David L.; and Lu, Chen-i, 4,341,855, Cl. 430-140.000.
Carter, John. Driving game board apparatus. 4,341,388, Cl. 275-248.000.
Casio Computer Co., Ltd.: *See*—
Ishida, Hideaki, 4,341,140, Cl. 84-1.030.
Cassidy, Edward L., Sr.; Cothran, William B.; and Safrit, Sam C., to Kayser-Roth Hosiery, Inc. Hosiery article with a reinforced toe with varying density. 4,341,097, Cl. 66-187.000.
Cassidy, Frederick; Baggaley, Keith H.; and Tyrrell, Arthur W. R., to Beecham Group Limited. Prostacyclin aza analogue intermediates. 4,341,708, Cl. 260-326.290.
Cassidy, Frederick; and Wootton, Gordon, to Beecham Group Limited. Cycloaliphatic prostaglandin analogues. 4,341,789, Cl. 424-274.000.
Castera, Jean P.; and Hartemann, Pierre, to Thomson-CSF. Magnetostatic wave magnetometer. 4,341,998, Cl. 324-244.000.
Cataneo, Ferdinand C.: *See*—
Sarsten, Jan A.; Heinzelmann, Fred J.; and Cataneo, Ferdinand C., 4,341,746, Cl. 423-228.000.
Caterpillar Mitsubishi Ltd.: *See*—
Uchida, Tomio; and Otabe, Kisaburo, 4,341,026, Cl. 37-117.500.
Caterpillar Tractor Co.: *See*—
Bagby, Thomas L.; Demeny, Gary L.; and Smead, Robert G., 4,341,815, Cl. 427-33.000.
Clarke, John M., 4,341,070, Cl. 60-39.040.

Dezelan, Joseph E., 4,341,149, Cl. 91-526.000.
Dezelan, Joseph E., 4,341,280, Cl. 180-243.000.
Melocik, Kurt B., 4,341,243, Cl. 137-625.680.
Spivey, William J., Jr., 4,341,073, Cl. 60-399.000.

CBS Inc.: *See—*
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CDM Connectors Development & Mfg. AG: *See—*
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Celanese Corporation: *See—*
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Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie: *See—*
Defourny, Jacques, 4,341,940, Cl. 219-117.100.

Cerrato, Vincent J., to Vending Components, Inc. Beer tap construction. 4,341,240, Cl. 137-533.000.

Cetec Corporation: *See—*
Mock, Donald E., 4,341,255, Cl. 160-369.000.

Chaffee, Eleanor; and Tuites, Richard C., to Eastman Kodak Company. Image-transfer reversal emulsions and elements with incorporated quinones. 4,341,858, Cl. 430-217.000.

Chai, An-Ti: *See—*
Evans, John C., Jr.; Chai, An-Ti; and Goradia, Chandra P., 4,341,918, Cl. 136-249.000.

Chakrabarti, Sarbananda; Hutchison, John; and Volkert, Otto, to BASF Aktiengesellschaft. Adhesive products and a process for their use in polyurethanes. 4,341,686, Cl. 427-244.000.

Challenger Diving Limited: *See—*
Chamberlain, William B., 4,342,071, Cl. 362-158.000.

Chamberlain, William B., to Challenger Diving Limited. Underwater lighting. 4,342,071, Cl. 362-158.000.

Champion International Corporation: *See—*
Roccaforte, Harry I., 4,341,341, Cl. 229-39.00R.

Chang, Clarence D.: *See—*
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Chanock, Robert M.: *See—*
Wyatt, Richard G.; James, Walter D.; Bohl, Edward H.; Theil, Kenneth W.; Saif, Linda J.; Kalica, Anthony R.; Greenberg, Harry B.; Kapikian, Albert Z.; and Chanock, Robert M., 4,341,870, Cl. 435-237.000.

Chappell, Austin. Car seat hide-a-way table. 4,341,418, Cl. 297-192.000.

Charbonneau, Larry F.; Calundann, Gordon W.; and East, Anthony J., to Celanese Corporation. Poly(ester-amide) capable of forming an anisotropic melt phase derived from dihydroxyanthraquinone, hydroxybenzoic acid, dicarboxylic acid, and aromatic monomer capable of forming an amide linkage. 4,341,688, Cl. 524-592.000.

Chaturvedi, Sushil K.: *See—*
Mei, Viung C.; Lavan, Zalman; and Chaturvedi, Sushil K., 4,341,088, Cl. 62-239.000.

Chaudhari, Praveen; Kiessling, John B.; Perlman, David J.; Tynan, Eugene E.; and von Gutfeld, Robert J., to International Business Machines Corporation. Method of bonding wires to passivated chip microcircuit conductors. 4,341,942, Cl. 219-121.0LD.

Chaudhary, Vinod K., to Miller Brewing Company. High dietary fiber product. 4,341,805, Cl. 426-481.000.

Chavannes, Marc A. Wire reinforced corrugated board and method and apparatus for making same. 4,341,579, Cl. 156-166.000.

Chen, Anthony B.: *See—*
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Cherian, Gabriel B.; Scheingold, William S.; and Youngfleish, Frank C., to AMP Incorporated. Active device substrate connector. 4,341,433, Cl. 339-176.0MP.

Chermak, Michael A.; Chudgar, Anil H.; and Kronschnabel, William J., to Gould Inc. Method of hose production. 4,341,578, Cl. 156-149.000.

Chesler, Ronald B.: *See—*
Dabby, Franklin W.; and Chesler, Ronald B., 4,341,541, Cl. 65-3.120.

Chester, Douglas R., to Exxon Research & Engineering Co. Apparatus for the direct connection of ancillary equipment to the telephone network. 4,341,926, Cl. 179-2.00C.

Chevron Research Company: *See—*
Tamm, Paul W., 4,341,625, Cl. 208-216.0PP.

Chi, Chad S.; and Craig, John W., to Sperry Corporation. Precision time duration detector. 4,341,964, Cl. 307-517.000.

Chiba, Tatsuya, to Nissan Motor Company, Limited. Back door stay arrangement. 4,341,414, Cl. 296-56.000.

Chicago Bridge & Iron Company: *See—*
Nail, James A., 4,341,085, Cl. 62-124.000.

Chini, Mario, to Fratelli Chini Egidio & Mario S.N.C. Metal clasp. 4,340,999, Cl. 24-241.00P.

Chino, Koichi; Yusa, Hideo; Oda, Akira; Miura, Hideichi; Horiuchi, Susumu; and Takamura, Yoshiyuki, to Hitachi, Ltd. Rotary vane type evaporator. 4,341,595, Cl. 159-6.00W.

Chisso Corporation: *See—*
Hayashi, Kohtaro; Morihara, Ko; and Nakamura, Kohji, 4,341,729, Cl. 264-566.000.
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Christensen, Burton G.; and Shih, David H., to Merck & Co., Inc. Process for the preparation of carbapenem antibiotics. 4,341,706, Cl. 260-245.20T.

Christensen, Burton G.; and Shih, David H., to Merck & Co., Inc. 6-, 2- and 1,1-Disubstituted-1-carbadethiapen-2-em-3-carboxylic acid S-oxides. 4,341,791, Cl. 424-274.000.

Christensen, Kim S., to Beckman Instruments, Inc. Method and apparatus for washing objects. 4,341,568, Cl. 134-21.000.

Christenson, Philip A.: *See—*
Willis, Brian J.; Christenson, Philip A.; and Mack, Robert A., 4,341,908, Cl. 568-819.000.

Christofferson, John L.: *See—*
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Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,341,776, Cl. 424-246.000.

Chun, Andrew. Exercycle mower apparatus. 4,341,058, Cl. 56-2.000.

Ciba-Geigy Corporation: *See—*
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Buxbaum, Lothar, 4,341,693, Cl. 524-93.000.
Jost, Max, 4,341,896, Cl. 548-143.000.
Pechey, David T.; and Coy, John H., 4,341,701, Cl. 260-161.000.
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Cieslak, Jerzy; Busko-Oszczapowicz, Irena; and Stepniak, Marek, to Tarchominskie Zaklady Farmaceutyczne. Esters of amidinepenicillins. 4,341,779, Cl. 424-248.510.

CIP Inc.: *See—*
Kaeppner, Werner M., 4,341,156, Cl. 101-141.000.

Civardi, Frank P.; and Getting, Milan J., to Inmont Corporation. Method of making leatherlike materials (B). 4,341,581, Cl. 156-209.000.

Clapp, James R., to Timken Company, The. Clamp-up device for roll neck bearings. 4,341,426, Cl. 308-187.100.

Clarion Co., Ltd.: *See—*
Ishii, Heiichiro, 4,341,086, Cl. 62-225.000.

Clark, Robert H.; and Wilson, Joseph P., to Cyprus Metallurgical Processes Corp. Cuprous chloride production from chalcopyrite. 4,341,742, Cl. 423-39.000.

Clarke, John M., to Caterpillar Tractor Co. High thermal efficiency power plant and operating method therefor. 4,341,070, Cl. 60-39.040.

Clarke, Robert L., to Sterling Drug Inc. Tropane derivatives. 4,341,895, Cl. 546-129.000.

Clarke, Stuart G.; and Craig, William A., to Bexford Limited. Vesicular recording materials. 4,341,862, Cl. 430-327.000.

Clesid S.A.: *See—*
Tinchant, Xavier, 4,342,118, Cl. 373-76.000.

Clyne, Arthur J. Method and apparatus for converting small temperature differentials into usable energy. 4,341,072, Cl. 60-325.000.

Coachwork Conversions Limited: *See—*
Woods, Kenneth P. R., 4,341,413, Cl. 296-50.000.

Coane, Philip J., to Hughes Aircraft Company. Mask structure for forming semiconductor devices, comprising electron-sensitive resist patterns with controlled line profiles. 4,341,850, Cl. 430-11.000.

Coffman, Kenneth L., to United States of America, Navy. Speed measuring apparatus for indicating percentage of nominal full speed, acceleration and deceleration. 4,341,996, Cl. 324-162.000.

Cohen, Georges: *See—*
Rojey, Alexandre; and Cohen, Georges, 4,341,084, Cl. 62-101.000.

Cohen, Lawrence B., to Kendall Co., The. Bonded nonwoven fabrics. 4,341,213, Cl. 128-284.000.

Cole National Corporation: *See—*
Sorrells, Frank D., 4,341,045, Cl. 51-216.0LP.

Combustion Engineering, Inc.: *See—*
Stockman, Richard F., 4,341,000, Cl. 29-157.30H.

Commissariat a l'Energie Atomique: *See—*
Abbes, Claude; de Villepoix, Raymond; and Rouaud, Christian, 4,341,406, Cl. 285-408.000.

Commonwealth Industrial Gases Limited, The: *See—*
Shaw, Robert G., 4,341,080, Cl. 62-64.000.

Compagnie Generale des Etablissements Michelin: *See—*
Preppel, Christian, 4,341,886, Cl. 526-79.000.

Comte, Georges: *See—*
Trezeguet, Jean-Pierre; Vives, Jean-Patrick; and Comte, Georges, 4,341,440, Cl. 350-96.230.

Condon, James E.; Roth, Carl W.; and Gritchen, Ralph A., to Vapor Corporation. System for controlling the kneeling operation of air suspension equipped transit vehicles. 4,341,398, Cl. 280-711.000.

Connors, Keith A.: *See—*
Kiikka, Oliver A.; and Connors, Keith A., 4,341,751, Cl. 423-461.000.

Container Corporation of America: *See—*
Zore, Frank E., 4,341,339, Cl. 229-34.0HW.

Continental Emsco Company: *See—*
Hermanson, Dean E., 4,341,242, Cl. 137-615.000.

Continental Group, Inc., The: *See—*
Mascia, Carmen T.; and Hasegawa, Gary K., 4,341,330, Cl. 222-401.000.

Control Electronics Co., Inc.: *See—*
Goldstein, Harold, 4,341,992, Cl. 324-65.00R.

Cook, Franklin M., to LeFiell Company. Electrical stimulation bar for an animal carcass. 4,340,993, Cl. 17-25.000.

Cooney, Charles L.: *See—*
Langer, Robert S., Jr.; Linhardt, Robert; Cooney, Charles L.; and Galliher, Parrish M., 4,341,869, Cl. 435-232.000.
Cooper Industries, Inc.: *See—*
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Corning Glass Works: *See—*
Andrus, Ronald L.; Reade, Richard F., deceased; and Reade, Clara M., administratrix, 4,341,543, Cl. 65-30.100.
Beall, George H.; and Pierson, Joseph E., 4,341,544, Cl. 65-30.140.
Borrelli, Nicholas F.; Whitman, Arthur J.; and Young, Peter L., 4,341,863, Cl. 430-346.000.
MacDowell, John F., 4,341,835, Cl. 428-292.000.
MacDowell, John F., 4,341,872, Cl. 501-6.000.
Corno, Maria L.: *See—*
Doria, Gianfederico; Romeo, Ciriaco; Sberze, Piero; Tibolla, Marcellino; and Corno, Maria L., 4,341,780, Cl. 424-248.550.
Corr, Clifford W.: *See—*
Adamson, Joseph W.; and Corr, Clifford W., 4,341,277, Cl. 180-54.00A.
Cortigene, Louis R.; and Wright, Robert G., to James River Corporation of Virginia. Animal litter and process. 4,341,180, Cl. 119-1.000.
Cosden Technology, Inc.: *See—*
Watson, James M., 4,341,600, Cl. 203-9.000.
Costa, Allan. Cosmetic applicator and associated method. 4,341,231, Cl. 132-88.500.
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Coulter Electronics, Inc.: *See—*
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Drbal, Vladimir J.; Ginsberg, Guenter; Hodgins, Bruce J.; Richardson, John A.; Britton, Ted W.; Grimm, Richard M.; Bello, Ernesto; Rodriguez, Rodolfo R.; and Saltz, Ivan K., 4,341,736, Cl. 422-100.000.
Hogg, Walter R.; and Brunsting, Albert, 4,341,471, Cl. 356-343.000.
Couper, Aitken M.; and Mellish, Stuart F., to Imperial Chemical Industries Limited. Production of porous diaphragms. 4,341,614, Cl. 204-296.000.
Courtaulds Limited: *See—*
Betts, Max W.; Burrow, Thomas R.; Robinson, Frank; and White, Patrick A., 4,341,830, Cl. 428-65.000.
Courter, David M.: *See—*
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Courtheoux, Michel P. G., to Etablissements Courtheoux. Apparatus for filling and heat sealing a bag. 4,341,054, Cl. 53-268.000.
Cove, Peter L.: *See—*
Appleby, Robert H.; and Cove, Peter L., 4,341,485, Cl. 403-231.000.
Covington, Michael J.: *See—*
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Cox, Fern H.; and Rosenhauch, Irwin, to Cameron Iron Works, Inc. Wellhead shearing apparatus. 4,341,264, Cl. 166-55.000.
Cox, Thomas C.: *See—*
Kuehni, Rolf G.; and Cox, Thomas C., 4,341,526, Cl. 8-610.000.
Coy, John H.: *See—*
Pechey, David T.; and Coy, John H., 4,341,701, Cl. 260-161.000.
CPC International Inc.: *See—*
Stolp, Klaus-Dieter; and Stute, Rolf W., 4,341,713, Cl. 260-412.200.
Craig, Gene C., to Lynes, Inc. Pressure operated test tool. 4,341,266, Cl. 166-317.000.
Craig, John W.: *See—*
Chi, Chad S.; and Craig, John W., 4,341,964, Cl. 307-517.000.
Craig, William A.: *See—*
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Crawford, Christopher L., to AMP Incorporated. Flat cable connector. 4,341,430, Cl. 339-99.00R.
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Ellis, John D.; Crichton, George; Godwin, Millard C.; and Morris, George C., 4,341,739, Cl. 422-207.000.
Critchell, Kenneth G.; and Brown, James M., Jr., to Pack River Management Company. Portable sawmill. 4,341,248, Cl. 144-378.000.
Croseck, Hans-Henning; and Jung, Rolf, to Laeis-Werke AG. Multiple press for ceramic moldings. 4,341,510, Cl. 425-149.000.
Cross, James R., to McDonnell Douglas Corporation. Machine for grinding gashes in end mill cutters. 4,341,044, Cl. 51-5.00D.
Cross, Peter E.: *See—*
Barnish, Ian T.; and Cross, Peter E., 4,341,792, Cl. 424-275.000.
Croyle, Barbara A., to SCM Corporation. Frozen raw custard. 4,341,808, Cl. 426-573.000.
Cruz-Uribe, Antonio S.; Lewis, Peter J.; and Miller, Peter T., to Pitney Bowes Inc. Ink supply system for an array of ink jet heads. 4,342,042, Cl. 346-140.00R.
Cunningham, Douglas J., to B.S.G. International Limited. Restraint device. 4,341,422, Cl. 297-488.000.
Cutchaw, John M. Liquid cooled connector for integrated circuit packages. 4,341,432, Cl. 339-112.00L.
Cutter Laboratories, Inc.: *See—*
Wallace, Donald G.; Schneider, Phillip M.; and Lundblad, John L., 4,341,764, Cl. 424-101.000.
CVI Incorporated: *See—*
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Cyprus Metallurgical Processes Corp.: *See—*
Clark, Robert H.; and Wilson, Joseph P., 4,341,742, Cl. 423-39.000.
Czernichowsky, Krystian G., to Goodyear Tire & Rubber Company, The. Multiple disc stitcher. 4,341,584, Cl. 156-412.000.
Dabby, Franklin W.; and Chesler, Ronald B., to Times Fiber Communications, Inc. Process for the production of optical fiber. 4,341,541, Cl. 65-3.120.
Daichiku Co., Ltd.: *See—*
Oide, Kunimasa, 4,341,532, Cl. 51-297.000.
Daicho, Norio; and Yonezawa, Keitaro, to Kabushiki Kaisha Neriki. Gas inlet attachment for a gas charger. 4,341,245, Cl. 141-18.000.
Daidotokushuko Kabushikikaisha: *See—*
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Daiichi Electric Co. Ltd.: *See—*
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Jahn, Walter, 4,341,359, Cl. 242-107.000.
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Dainippon Pharmaceutical Co., Ltd.: *See—*
Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, 4,341,784, Cl. 424-256.000.
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Kamata, Keiichiro, 4,342,046, Cl. 358-75.000.
Daire, Marc; Larrere, Yves; and Mangin, Andre, to Societe Francaise D'Electrometallurgie-Sofrem. High-hardness abrasive product based on alumina and aluminium oxycarbides and process for preparing same. 4,341,533, Cl. 51-309.000.
Dalby, Thomas G., to Boeing Company, The. Decoupling means for monopole antennas and the like. 4,342,037, Cl. 343-846.000.
Darecchio, Andrea, to FMC Corporation. Method for providing overriding pressure in heat processing sealed containers. 4,341,734, Cl. 422-25.000.
Das, Balbhadra; and Tucker, Billie D., to PPG Industries, Inc. Sizing composition and sized glass fibers and process. 4,341,877, Cl. 523-409.000.
Data General Corporation: *See—*
Grondalski, David, 4,342,080, Cl. 364-200.000.
Dauplaise, David L.; and Nagaraj, D. R., to American Cyanamid Company. Process for the flotation of sulfide minerals employing alkylaryl hydrocarbon compounds. 4,341,626, Cl. 209-166.000.
Davidson, Walter C.; and Fieselmann, Benjamin F., to Halcon SD Group, Inc., The. Recovery of rhodium from carbonylation residues. 4,341,741, Cl. 423-22.000.
Davis, Jack W., to United Technologies Corporation. Laser discharge electrode configuration. 4,342,115, Cl. 372-87.000.
Davis, William F., to Motorola, Inc. High frequency line ripple cancellation circuit. 4,341,990, Cl. 323-303.000.
Davis, William G., to Liquid Modulators, Inc. Liquid modulator. 4,341,092, Cl. 62-475.000.
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De Forende Bryggerier A/S: *See—*
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De Soto, Inc.: *See—*
Sekmakas, Kazys; Shah, Raj; and Parenti, Aurelio J., 4,341,681, Cl. 524-555.000.
Dearling, Neal S. Direct and indirect fragrance dispensing device. 4,341,348, Cl. 239-34.000.
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Borden, Raymond W.; and DeBard, James E., 4,341,968, Cl. 310-91.000.
Debs, Victor: *See—*
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de Camargo, Luiz M. V. Wave action device for radio frequencies. 4,342,033, Cl. 343-753.000.
Deconinck, Didier, to Allibert Exploitation. Article of furniture with inclinable back. 4,341,417, Cl. 297-24.000.
Decouzon, M. Georges; and Carduner, M. Jean J., to Regie Nationale des Usines Renault. Front axle assembly for automobile. 4,341,396, Cl. 280-666.000.
Deere & Company: *See—*
Gold, Raymond D.; Tufts, Robert A.; and Schillerstrom, Merle S., 4,341,311, Cl. 209-644.000.
Moore, James W.; and Peterson, Rudolph A., Jr., 4,341,284, Cl. 181-272.000.
De Filippo, Joseph, to CBS Inc. Winding core for magnetic tape adapted for stacking. 4,341,357, Cl. 242-68.500.
Defourny, Jacques, to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie. Monitoring resistance welding. 4,341,940, Cl. 219-117.100.
Degussa - Aktiengesellschaft: *See—*
Bohm, Wolfgang; Wolmer, Roger; Szulczyk, Andreas; and Malikowski, Willi, 4,341,556, Cl. 75-173.00A.
Deichert, William G.; Friends, Gary D.; Melpolder, John B.; and Park, Joon S., to Bausch & Lomb Incorporated. Polysiloxane composition and biomedical devices. 4,341,889, Cl. 528-26.000.
Delaby, Alain: *See—*
Bisschops, Yvan; Draguez Tripels de Hault, Emmanuel; Jnoff, Aleksef; and Delaby, Alain, 4,341,644, Cl. 252-8.800.
Del'Acqua, Raymond M. Container corner post locking assembly. 4,341,495, Cl. 410-78.000.

de Lange, Willem, to Duphar International Research B.V. Granular pesticidal composition and method of preparing same. 4,341,552, Cl. 71-105.000.

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Landreau, Jean; Delpech, Philippe; and Bouley, Jean-Claude, 4,341,570, Cl. 148-1.500.

DeLuca, Frank, to Stanadyne, Inc. Outwardly opening poppet pintle nozzle. 4,341,351, Cl. 239-453.000.

DeMarinis, Robert M.; and Shah, Dinubhai H., to SmithKline Corporation. Pharmaceutical compositions and method of producing central alpha$_1$ agonist activity utilizing octahydrobenzo[f]quinoline compounds. 4,341,786, Cl. 424-258.000.

Demczyk, Brian G.: *See—*
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Demeny, Gary L.: *See—*
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de Neui, Richard P.: *See—*
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Dengel, Ottmar H.: *See—*
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DeNora, Oronzio; and Spaziante, Placido M., to Oronzio deNora Impianti Elettrochimici S.p.A. Novel electrolysis process. 4,341,604, Cl. 204-98.000.

Denzin, Warren. Reel-type stubble conditioning device. 4,341,061, Cl. 56-192.000.

Derleth, Helmut; Bretz, Karl-Heinz; and Sauer, Gunther, to Kali-Chemie Aktiengesellschaft. Process for the production of spherical shaped bodies based on Al_2O_3 and optionally SiO_2. 4,341,663, Cl. 252-463.000.

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DeSoto, Inc.: *See—*
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DeTorre, Robert P., to PPG Industries, Inc. Apparatus for scoring a coated substrate. 4,341,139, Cl. 83-886.000.

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Dettfurth, Karl; and Dettfurth, Bernd, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Built-in connector element for sandwich type compound panels. 4,341,053, Cl. 52-787.000.

Deubel, Reinhold: *See—*
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Deutsch, Leslie J.: *See—*
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Deutsch, Ralph; and Deutsch, Leslie J., to Kawai Musical Instrument Mfg. Co., Ltd. Polyphonic sliding portamento in a musical instrument. 4,341,141, Cl. 84-1.240.

Deutsche Gesellschaft fur Wiederaufarbeitung: *See—*
Heimerl, Wilfried C., 4,341,547, Cl. 65-165.000.

de Villepoix, Raymond: *See—*
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DeVittorio, Joseph M., to S. C. Johnson & Son, Inc. Electrostatic spraying of liquids. 4,341,347, Cl. 239-3.000.

Dezelan, Joseph E., to Caterpillar Tractor Co. Selectively actuatable fluid control system for a work element. 4,341,149, Cl. 91-526.000.

Dezelan, Joseph E., to Caterpillar Tractor Co. Variable displacement front wheel drive system. 4,341,280, Cl. 180-243.000.

Diasonics Cardio/Imaging, Inc.: *See—*
Anderson, Weston A., 4,341,120, Cl. 73-618.000.

Diba, Keyvan T., to Bio-Energy Systems, Inc. Tool for flexible tube installation. 4,341,002, Cl. 29-235.000.

Dickinson, William A., to North American Philips Consumer Electronics Corp. Supportive means for a cathode ray tube. 4,342,049, Cl. 358-246.000.

Diery, Helmut; Wagemann, Wolfgang; Weide, Joachim; Deubel, Reinhold; and Hille, Martin, to Hoechst Aktiengesellschaft. Polyether polyamines, the salts thereof, process for their manufacture and their use. 4,341,716, Cl. 260-456.00A.

Diller, Harold L. Tool tray. 4,341,304, Cl. 206-349.000.

Dimension Weld International Corp., The: *See—*
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Dingli, Paul, to Molins Limited. Forming groups of rod-like articles. 4,341,298, Cl. 198-419.000.

Discovision Associates: *See—*
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Dixon, Samuel, Jr., to United States of America, Army. Electronically tuned Gunn oscillator and mixer including the same. 4,342,009, Cl. 331-107.0DP.

Dixon, Samuel, Jr.; and Jacobs, Harold, to United States of America, Army. Dielectric waveguide power limiter. 4,342,010, Cl. 333-17.00L.

Dodich, James: *See—*
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Dolco Packaging Corporation: *See—*
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Donoho, David W., to Pulsar Laboratories, Inc. Compositions for pulsating flares. 4,341,573, Cl. 149-42.000.

Dorfman, Leonard, to Timex Corporation. Timepiece module frame and assembly. 4,342,105, Cl. 368-88.000.

Doria, Gianfederico; Romeo, Ciriaco; Sberze, Piero; Tibolla, Marcellino; and Corno, Maria L., to Farmitalia Carlo Erba S.p.A. Substituted pyrido [1,2-a] pyrimidines useful as anti-allergic, anti-ulcer and anti-diabetic agents. 4,341,780, Cl. 424-248.550.

Doring, Erich. Shelving for pallets. 4,341,313, Cl. 211-151.000.

Dorr-Oliver Incorporated: *See—*
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dos Santos, Claudio; and McFarland, Archie R., to Beehive Machinery, Inc. Apparatus and method for producing simulated cuts of meat. 4,340,994, Cl. 17-45.000.

Doshi, Jyotindra K.; and Wallenberg, Scott A., to DeSoto, Inc. Two component polyurethane coating system having extended pot life and rapid cure. 4,341,689, Cl. 523-211.000.

Douglass, John C., Jr. Building utility core. 4,341,052, Cl. 52-742.000.

Douthett, Joseph A.; and Tanczyn, Harry, to Armco Inc. High strength austenitic stainless steel exhibiting freedom from embrittlement. 4,341,555, Cl. 75-128.00A.

Dow Chemical Company, The: *See—*
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McIntyre, James A.; Phillips, Robert F.; and Lefevre, Joseph D., 4,341,606, Cl. 204-98.000.
Monnerat, Georgia A.; Ham, George E.; Hairston, Thomas J.; and Hatch, Melvin J., 4,341,658, Cl. 252-428.000.
Strege, Paul E., 4,341,905, Cl. 568-45.000.

Downey, Gale D., to FMC Corporation. Process of removing nitrogen oxides from gaseous mixtures. 4,341,747, Cl. 423-235.000.

Downey, Gerald P.; and McKewan, Arthur J., to Microdot Inc. Prevailing torque bolt. 4,341,497, Cl. 411-311.000.

Doyle, Holly T.; Doyle, Robert O.; and Thomis, Wendl. Electronic board game apparatus. 4,341,385, Cl. 273-237.000.

Doyle, Robert O.: *See—*
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Draguez Tripels de Hault, Emmanuel: *See—*
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Drustar, Inc.: *See—*
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Du Pont Canada Inc.: *See—*
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Dubuc, Joseph J., to Honeywell Information Systems Inc. Tape device adapter. 4,342,081, Cl. 364-200.000.

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Dumont, Bernard. Word finding and guessing game. 4,341,389, Cl. 273-265.000.

Dunlop Limited: *See—*
Singer, Reginald D.; Holden, Brian J.; and Hughes, John H., 4,341,822, Cl. 427-389.900.

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Duphar International Research B.V.: *See—*
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Du Pont de Nemours, E. I., and Company: *See—*
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Ganfield, David J.; Hunkapiller, Michael W.; Knight, Ernest, Jr.; and Korant, Bruce D., 4,341,761, Cl. 424-85.000.
Grantham, Gary D., 4,341,772, Cl. 424-211.000.
Hartig, Martval J., 4,341,601, Cl. 203-11.000.
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Sysak, Peter K., 4,341,860, Cl. 430-277.000.
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Duranleau, Roger G.; and Gates, Walter C., Jr., to Texaco Inc. Production of methane-rich gas. 4,341,531, Cl. 48-197.00R.
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., to Smith Kline & French Laboratories Limited. Pharmacologically active compounds. 4,341,787, Cl. 424-270.000.
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Shank, Joseph L., 4,341,810, Cl. 426-576.000.
Dyregrov, David L. Method and apparatus for displaying three coordinates of an object in a two dimensional plane. 4,341,466, Cl. 355-50.000.
E:F Technology, Inc.: *See—*
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E. R. Squibb & Sons, Inc.: *See—*
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Lu, Wei C., 4,341,854, Cl. 430-124.000.
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Mattes, Susan L.; and Farid, Samir Y., 4,341,852, Cl. 430-83.000.
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Eaton Corporation: *See—*
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Eberle, William J., to General Battery Corporation. Method and apparatus for forming battery straps and intercell connections. 4,341,256, Cl. 164-109.000.
Echols, Charles R. Tool for installing freeze plugs. 4,341,004, Cl. 29-275.000.
Edminster, Robert E., to Motorola Inc. Retard sensing double release safe separation munition timer. 4,341,159, Cl. 102-228.000.
Edwards, Colin W., to Hughes Microelectronics Limited. Nonvolatile semiconductor memory circuits. 4,342,101, Cl. 365-154.000.
Edwards, Welby C. Hay bale mover. 4,341,411, Cl. 294-74.000.
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Eikerman, H. H.; and Naylor, Joseph L., to Blount, Inc. Grain dryer with heat exchange assembly. 4,341,516, Cl. 432-95.000.
Elam, James O. Cuffed endotracheal tube and method. 4,341,210, Cl. 128-207.150.
Eldridge, William T., to Tampax Incorporated. Absorbent device. 4,341,215, Cl. 128-285.000.
Electric Hose & Rubber Company: *See—*
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Ose, Earl E.; and Kirst, Herbert A., 4,341,770, Cl. 424-181.000.
Elliott Brothers Limited: *See—*
Singleton, Peter A., 4,342,117, Cl. 372-107.000.
Elliott, Robert, to Marconi Instruments Limited. Swept frequency oscillator with compensation for variations in tuning sensitivity. 4,342,007, Cl. 334-4.000.
Ellis, Darwin L., to Aluminum Company of America. Method and apparatus for blanking, folding and inserting membrane into container covercap. 4,341,498, Cl. 413-3.000.
Ellis, John D.; Crichton, George; Godwin, Millard C.; and Morris, George C., to Leathers Chemical Company, Limited. Phosphoric acid ammoniation apparatus. 4,341,739, Cl. 422-207.000.
Ellis Williams Company, The: *See—*
Rambin, Leroy M., Jr., 4,341,508, Cl. 417-426.000.
Ellison, Robert H.; and Byrne, Martin A., to General Electric Company. Aryloxyphosphonium salts. 4,341,714, Cl. 260-440.000.
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Emhart Industries, Inc.: *See—*
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Energy Converion Devices, Inc.: *See—*
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Engel, John F., to FMC Corporation. Control of acarids with biphenylmethyl perhaloalkylvinylcyclopropanecarboxylates. 4,341,796, Cl. 424-305.000.
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Evans, John D., Jr., to Eastman Kodak Company. Method and apparatus for determining cigarette filter rod pressure drop. 4,341,109, Cl. 73-37.000.
Evans, William J., to Emhart Industries, Inc. Anchoring apparatus for an electrical device. 4,342,070, Cl. 361-433.000.
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Sarsten, Jan A.; Heinzelmann, Fred J.; and Cataneo, Ferdinand C., 4,341,746, Cl. 423-228.000.
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Facchini, Libero, to Farmatic S.N.C. Metering device particularly for capsule-filling machines. 4,341,244, Cl. 141-18.000.
Fachini, Robert M.; Covington, Michael J.; and Orsborn, Jesse H., to International Harvester Co. Basket lift apparatus. 4,341,423, Cl. 298-18.000.
Fair, Walter R. Livestock confinement pasture machine. 4,341,181, Cl. 119-20.000.
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Ferris, Michael J., to Beecham Group Limited. Secondary amines and their use in pharmaceutical compositions. 4,341,793, Cl. 424-279.000.
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Fisher, Lynn E., to General Electric Company. Two-speed single phase motor with centrifugal switch. 4,341,987, Cl. 318-774.000.
Fitzgerald, Cornelius G., to Exxon Research & Engineering Co. Neomesophase formation. 4,341,621, Cl. 208-45.000.
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Broadway, William W., 4,341,233, Cl. 137-72.000.
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Bertolacini, Ralph J.; and Forsythe, William L., Jr., 4,341,660, Cl. 252-455.00Z.
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Frankel, Milton B.; and Witucki, Edward F., to Rockwell International Corporation. Fluorodinitro compounds. 4,341,712, Cl. 260-349.000.
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French, Michael J. Wave-energy converter. 4,341,074, Cl. 60-504.000.
French, Roger F., to Aptec Corporation. Phase-change heat transfer system. 4,341,202, Cl. 126-433.000.
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Fuson, William R.: *See*—
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Gabr, Saad Z. M., to A.R.D. Anstalt. Modular electronic systems. 4,342,002, Cl. 330-65.000.
Gadsby, Bruce; and Simmons, Kate A., to Du Pont de Nemours, E. I., and Company. Method of heating and freezing a texturized mycelial fungal mass. 4,341,806, Cl. 426-511.000.
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Gaubert, Rene J. Method and apparatus for making pouches with dispensing fittings. 4,341,522, Cl. 493-213.000.
Geboers, Josephus J. A.; Janssen, Daniel J. G.; and Bloos, Johannes, to U.S. Philips Corporation. Voltage stabilizer suitable for a telephone set. 4,341,991, Cl. 323-311.000.
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General Electric Company: *See*—
Allen, Benjamin F., 4,341,923, Cl. 174-117.00R.
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Ellison, Robert H.; and Byrne, Martin A., 4,341,714, Cl. 260-440.000.
Erkfritz, Donald S., 4,341,493, Cl. 407-36.000.
Fisher, Lynn E., 4,341,987, Cl. 318-774.000.
Harder, Ursula M.; Kaswinkel, Karl D.; Gould, James W.; West, Jon K.; and Wynn, Michael J., 4,341,636, Cl. 210-662.000.
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Krantz, Karl W., 4,341,684, Cl. 523-175.000.
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LeGrand, Donald G., 4,341,824, Cl. 428-15.000.
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Pangburn, William W., 4,341,966, Cl. 310-61.000.
Park, Dong-Sil; Breiter, Manfred W.; Dunn, Bruce S.; and Navias, Louis, 4,341,849, Cl. 429-104.000.
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General Foods Corporation: *See*—
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Naiff, Kenneth L., 4,341,960, Cl. 307-221.00R.
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Georgalas, Nick; and Keaveney, William P., to Inmont Corporation. Water-borne epoxy-phenolic coating compositions. 4,341,678, Cl. 523-414.000.
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Germinario, Roger. Sandwich assembling jig. 4,341,376, Cl. 269-288.000.
Gerrick, Steven J., Jr. Force multiplier for punch presses. 4,341,105, Cl. 72-453.020.
Gerzanich, Michael, to LeHara Manufacturing Co., Inc. Dual coupling mechanism for providing floatational operation of a front mounted cutting assembly. 4,341,059, Cl. 56-15.800.
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Immekus, Karl, 4,341,553, Cl. 75-53.000.
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Ghougasian, John N. Exposure guide. 4,341,467, Cl. 355-61.000.
Gibson, Robert, to Siemens Medical Laboratories, Inc. Energy interlock system for a linear accelerator. 4,342,060, Cl. 361-1.000.
Gidaspow, Dimitri; Lavan, Zalman; and Onischak, Michael. Thermally regenerative desiccant element. 4,341,539, Cl. 55-278.000.
Gidseg, Edward D. Demountable hinge. 4,340,991, Cl. 16-254.000.
Gift, Warren H., to Plaskolite, Inc. Impact resistant blends of acrylate thermoplastic with sequentially polymerized four composition particulate additive. 4,341,883, Cl. 525-82.000.
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Ginzburg, Ben Z.: *See*—
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Gittins-Thomas, Mervyn. Curing kiln. 4,341,517, Cl. 432-141.000.

Glasa, Winfried; and Gumm, Peter, to Hoechst Aktiengesellschaft. Thermal pressure fixing device. 4,341,458, Cl. 355-3.0FU.

Glaxo Group Limited: *See*—
White, Herbert J., 4,341,777, Cl. 424-246.000.

Gleason Works: *See*—
Hackett, Kenneth P., 4,341,106, Cl. 72-453.070.

Gleim, William K. T. Superconductor. 4,341,924, Cl. 174-15.00S.

Glickman, David; Greanias, Evon C.; Repass, James T.; and Rosenbaum, Walter S., to International Business Machines Corporation. Stem processing for data reduction in a dictionary storage file. 4,342,085, Cl. 364-300.000.

Goddard, David M.: *See*—
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Godwin, Millard C.: *See*—
Ellis, John D.; Crichton, George; Godwin, Millard C.; and Morris, George C., 4,341,739, Cl. 422-207.000.

Gold, Kenneth A. Fabric and method of manufacture using selvage bands. 4,341,829, Cl. 428-53.000.

Gold, Raymond D.; Tufts, Robert A.; and Schillerstrom, Merle S., to Deere & Company. Method and apparatus for sorting rivets. 4,341,311, Cl. 209-644.000.

Goldberg, Michel: *See*—
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Goldstein, Harold; and Montren, William, to Patient Technology, Inc. Electronic thermometer. 4,341,117, Cl. 374-170.000.

Goldstein, Harold, to Control Electronics Co., Inc. Conductive probe cover. 4,341,992, Cl. 324-65.00R.

Golias, Tipton, to Helena Laboratories Corporation. Microchromatographic column and method. 4,341,635, Cl. 210-656.000.

Gombas, Laszlo A. Can end configuration. 4,341,321, Cl. 220-66.000.

Gondo, Masaaki: *See*—
Sakakibara, Kyoichi; Manita, Hideaki; Gondo, Masaaki; and Yamashita, Haruo, 4,341,758, Cl. 424-12.000.

Gongaware, Paul R.: *See*—
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Good, Allen H. Lotion and method for cleansing and conditioning the skin therewith. 4,341,799, Cl. 424-365.000.

Goodin, Robert B.: *See*—
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Goodman, Richard W., to Harris Corporation. Computer terminal. 4,342,095, Cl. 364-900.000.

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Czernichowsky, Krystian G., 4,341,584, Cl. 156-412.000.
Lal, Joginder; and Walters, Sandra J., 4,341,667, Cl. 525-211.000.
Thompson, Donald R.; and White, John R., 4,341,368, Cl. 249-142.000.
Welter, Thomas N. H., 4,341,249, Cl. 152-330.0RF.
Welter, Thomas N. H., 4,341,250, Cl. 152-354.00R.

Goradia, Chandra P.: *See*—
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Gordon, Donald J.; Johnson, Frank H.; Schick, George L.; and Smart, J. David, to Slater Steel Industries Ltd. Hand cart. 4,341,393, Cl. 280-47.260.

Gordon, Marvin, to Whitman Medical Corporation. Moisture-retentive covering for ointment application. 4,341,208, Cl. 128-156.000.

Gorog, Istvan; Leedom, Marvin A.; and Wittke, James P., to RCA Corporation. Method and apparatus for positioning a tapered body. 4,341,472, Cl. 356-399.000.

Goto, Junjiro: *See*—
Nakamura, Osamu; Akamatsu, Takeshi; and Goto, Junjiro, 4,341,542, Cl. 65-17.000.

Gottesman, Martin: *See*—
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Gottlieb Johner: *See*—
Sidler, Kurt, 4,341,138, Cl. 83-820.000.

Gottliebson, Mayo. Automatic sequence control system. 4,341,983, Cl. 318-102.000.

Gould Inc.: *See*—
Chermak, Michael A.; Chudgar, Anil H.; and Kronschnabel, William J., 4,341,578, Cl. 156-149.000.
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Grabmaier, Josef, to Siemens Aktiengesellschaft. Method for producing large surface plate or disc-shaped Si crystals with columnar structure. 4,341,589, Cl. 156-606.000.

Graboyes, Herman A.; and Helman, Frank D., to Atlas Steel Rule Die, Inc. Method of registering a steel rule die and counterplate. 4,341,008, Cl. 29-467.000.

Grantham, Gary D., to Du Pont de Nemours, E. I., and Company. Agricultural phosphorus-containing sulfenamides. 4,341,772, Cl. 424-211.000.

Greanias, Evon C.: *See*—
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Great American Development Co.: *See*—
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Great Lakes Chemical Corporation: *See*—
Lindvay, Michael W., 4,341,890, Cl. 528-212.000.

Green, Norman W., to Occidental Research Corporation. Fluidized coal pyrolysis apparatus. 4,341,598, Cl. 202-99.000.

Greenberg, Harry B.: *See*—
Wyatt, Richard G.; James, Walter D.; Bohl, Edward H.; Theil, Kenneth W.; Saif, Linda J.; Kalica, Anthony R.; Greenberg, Harry B.; Kapikian, Albert Z.; and Chanock, Robert M., 4,341,870, Cl. 435-237.000.

Greenwood, Arthur R., to UOP Inc. Catalyst flow dampener. 4,341,740, Cl. 422-310.000.

Gregor, Carl-Heinz; Reimann, Hans; and Wildmoser, Alfred, to Linde Aktiengesellschaft. Destruction of bulking sludge. 4,341,632, Cl. 210-608.000.

Gregor, Karl; and Feldhaus, Karl, to Gewerkschaft Schalker Eisenhutte. Element for cleaning coking-oven doors and doorjamb. 4,340,987, Cl. 15-93.00A.

Gregory, Charles A. Fire escape improvement. 4,341,286, Cl. 182-10.000.

Gretag Aktiengesellschaft: *See*—
Mast, Fred, 4,341,473, Cl. 356-446.000.

Grier, John D.: *See*—
Taylor, Lynn J.; and Grier, John D., 4,341,820, Cl. 427-226.000.

Griffin, Ernest E.: *See*—
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Grimm, Richard M.: *See*—
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Gritchen, Ralph A.: *See*—
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Groenhof, Hendrik C., to Norsk Hydro a.s. Method for purification and concentration of $MgCl_2$-brines. 4,341,752, Cl. 423-497.000.

Grondalski, David, to Data General Corporation. Computer with microcode generator system. 4,342,080, Cl. 364-200.000.

Grosbois, Jean: *See*—
Bachot, Jean; and Grosbois, Jean, 4,341,615, Cl. 204-296.000.

Gross, Leo; and Skeist, S. Merrill. Arc spreading with initiators. 4,341,977, Cl. 313-485.000.

Gross, Leo; and Skeist, S. Merrill. Fluorescent lamp with rotating magnetic field arc spreading device. 4,341,979, Cl. 315-57.000.

Grubbs, Dean O.: *See*—
Hollandsworth, William J.; and Grubbs, Dean O., 4,341,468, Cl. 356-155.000.

Gruber, Werner, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Dimethacrylic acid esters of dimethyloltetrahydrofuran and its derivatives. 4,341,711, Cl. 549-500.000.

Grumman Aerospace Corporation: *See*—
Hofmanis, Ilmars A.; and Lebel, Joseph A., 4,342,029, Cl. 340-703.000.

Grundon, Peter M.: *See*—
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Grzymek, Rolf: *See*—
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Gschwender, Alois; Renner, Wolfgang; and Hahn, Herbert, to Flux-Gerate Gesellschaft mit beschrankter Haftung. Pump for fluid media. 4,341,503, Cl. 415-112.000.

GTE Products Corporation: *See*—
Scholz, John A.; and English, George J., 4,341,513, Cl. 431-362.000.
Tozier, John E.; and Shaffer, John W., 4,341,817, Cl. 427-54.100.

Gumm, Peter: *See*—
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Gunter, Thomas G.: *See*—
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Guritz, Kenneth E.; and Guritz, Michael L. Lighting fixture. 4,342,072, Cl. 362-222.000.

Guritz, Michael L.: *See*—
Guritz, Kenneth E.; and Guritz, Michael L., 4,342,072, Cl. 362-222.000.

Guse, Gunter: *See*—
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Gutzwiller, James E., Jr., to Babcock & Wilcox Company, The. Inspection system for heat exchanger tubes. 4,341,113, Cl. 73-105.000.

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Brown, Paul J.; Dugan, Robert J.; Guyette, Richard R.; and Strong, David L., 4,342,082, Cl. 364-200.000.

Haas, Herbert, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of and drive for actuating absorber rods in pebble bed reactors. 4,341,733, Cl. 376-226.000.

Haast, William E. Use of snake venoms for treatment of neurological and related disorders. 4,341,762, Cl. 424-88.000.

Habbal, M. Zouheir M., to Rational Alternative. Simple, non-chromatographic, highly specific method for the determination of urinary vanilmandelic acid. 4,341,528, Cl. 23-230.00B.

Hackett, Kenneth P., to Gleason Works. Apparatus for controlling the movement of a reciprocatory hydraulically driven element of a metal forming machine. 4,341,106, Cl. 72-453.070.

Hagelberg, Allen C.; and Allardt, Clark E., to General Dynamics, Pomona Division. Hydropulse underwater propulsion system. 4,341,173, Cl. 114-20.00A.

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Hahn, Herbert: *See*—
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Haidinger, Erich, to Siemens Aktiengesellschaft. Method for attaching and securing power supply wires to electrical components. 4,341,013, Cl. 29-854.000.

Hairston, Thomas J.: *See*—
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Halcon SD Group, Inc., The: *See*—
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Hale, John R., to RCA Corporation. Beading apparatus for making an electron gun assembly having self-indexing insulating support rods. 4,341,545, Cl. 65-154.000.

Hall, Henry P., to GenRad, Inc. Method of and apparatus for automatic measurement of circuit parameters with microprocessor calculation techniques. 4,342,089, Cl. 364-481.000.

Halpern, Yuval, to Borg-Warner Corporation. Intumescent flame retardant compositions. 4,341,694, Cl. 252-606.000.

Ham, George E.: *See*—
Monnerat, Georgia A.; Ham, George E.; Hairston, Thomas J.; and Hatch, Melvin J., 4,341,658, Cl. 252-428.000.

Hamatani, Fumikazu: *See*—
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Hamilton, Frank G.; and Kelyman, John, Jr., to Rader Companies, Inc. Method and apparatus for recovering fuel and other resources from refuse utilizing disk screens. 4,341,353, Cl. 241-24.000.

Hammer, Jeffrey M.; Ullestad, David C.; and Wesoloski, Stephen J., to Honeywell Inc. Method and apparatus for power load shedding. 4,341,345, Cl. 236-46.00R.

Hammerschlag, Peter G. Locking tab for hook-in type shelving. 4,341,486, Cl. 403-252.000.

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Hand, Calvin H., Jr.; Hand, David J.; and Careatti, John A., to Hand, Calvin H., Jr.; Hand, David J.; Careatti, John A.; and Mulqueen, Herbert J., Jr. Bio-mass burner with grate therefor and method of operation. 4,341,199, Cl. 126-163.00A.

Hand, David J.: *See*—
Hand, Calvin H., Jr.; Hand, David J.; and Careatti, John A., 4,341,199, Cl. 126-163.00A.

Hanlet, Jacques M., to Alpha-Omega Development, Inc. Display system. 4,341,976, Cl. 313-210.000.

Hann, Simon A., to Versatile Cornat Corporation. Wing back implement. 4,341,269, Cl. 172-311.000.

Hanson, Lawrence G., to Burroughs Corporation. Number conversion apparatus. 4,342,026, Cl. 340-347.0DD.

Hanson, Lawrence G., to Burroughs Corporation. Radix conversion system. 4,342,027, Cl. 340-347.0DD.

Hara, Minoru, to Kabushiki Kaisha Kubota Seisakusho. Centrifuge. 4,341,342, Cl. 233-1.00A.

Harada, Yusuke: *See*—
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Harbert, Charles A.: *See*—
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Harder, Ursula M.; Kaswinkel, Karl D.; Gould, James W.; West, Jon K.; and Wynn, Michael J., to General Electric Company. Treatment of wastewater. 4,341,636, Cl. 210-662.000.

Hardman, Harley F.: *See*—
Callahan, James L.; Hardman, Harley F.; and Milberger, Ernest C., 4,341,717, Cl. 260-465.300.

Harford, Jack R., to RCA Corporation. Television intermediate frequency amplifier with feedback stabilization. 4,342,005, Cl. 330-254.000.

Hargitay, Bartholomew, to Union Carbide Corporation. Ultrafiltration and reverse osmosis device comprising plural carbon tubes bonded together. 4,341,631, Cl. 210-323.200.

Harlow, Norman R., to Carlisle Corporation. Crosshead extrusion die. 4,341,509, Cl. 425-114.000.

Harris Corporation: *See*—
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Harrison, Christopher R. B.; and Pittaway, Alan K., to Wilkinson Sword Limited. Hand tools. 4,341,016, Cl. 30-262.000.

Harsh, Maurice D.: *See*—
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Harshaw Chemical Company, The: *See*—
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Hart, Deborah L.: *See*—
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Hart, James F.; and Hart, Deborah L. Hydrotherapy bath or spa. 4,340,982, Cl. 4-541.000.

Hartemann, Pierre: *See*—
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Hartig, Martval J., to Du Pont de Nemours, E. I., and Company. Water evaporation process. 4,341,601, Cl. 203-11.000.

Hartmut, Rieschel, to Maschinenfabrik Koppern GmbH & Co. KG. Apparatus for the damping of bulk material. 4,341,349, Cl. 239-222.170.

Harvard College: *See*—
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Harvey, William A.: *See*—
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Hasegawa, Gary K.: *See*—
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Haslanger, Martin F., to E. R. Squibb & Sons, Inc. Intermediates for 10,10-difluoroprostacyclins. 4,341,710, Cl. 549-214.000.

Hassall, Cedric H.; and Moody, Christopher J., to Hoffmann-La Roche Inc. Pyridazopyridazine derivatives. 4,341,781, Cl. 424-250.000.

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Hatch, David A.; and White, Paul J., to Pintek, Inc. Interconnection system for shielded electrical cable. 4,341,428, Cl. 339-14.00R.

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Hattori, Ryuichi: *See*—
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Hattori, Tadashi: *See*—
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Hattori, Yoshihumi: *See*—
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Hauber, Rudiger; and Guse, Gunter, to Beiersdorf Aktiengesellschaft. Water-soluble, pressure sensitive, self-adhesive, composition, method of manufacture thereof, and tapes produced therewith. 4,341,680, Cl. 525-329.000.

Hauck Manufacturing Company: *See*—
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Haumberger, Hans, Jr.: *See*—
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Haumberger, Hans, Sr.: *See*—
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Hauser, Arnold: *See*—
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Hayashi, Kohtaro; Morihara, Ko; and Nakamura, Kohji, to Chisso Corporation. Method and apparatus for making biaxially stretched tubular films. 4,341,729, Cl. 264-566.000.

Heard, Robert A. H. Mounting for offset signs. 4,341,029, Cl. 40-607.000.

Hedges, Rhey W.: *See*—
Parker, Louis W.; and Hedges, Rhey W., 4,341,984, Cl. 318-138.000.

Heidborn, Ernst, to Balco Filtertechnik GmbH. Process for manufacturing screens for centrifugals, particularly working screens for continuously operating sugar centrifugals. 4,341,603, Cl. 204-11.000.

Heide, Helmut, to Joh. Moritz Rump. Circular knitting needle. 4,341,094, Cl. 66-117.000.

Heilhecker, Joe K., to Brandt Company, The. Screen separator. 4,341,627, Cl. 209-409.000.

Heimerl, Wilfried C., to Deutsche Gesellschaft fur Wiederaufarbeitung. Apparatus for enclosing highly radioactive waste material in a glass melt. 4,341,547, Cl. 65-165.000.

Heinke, Horst, to ITW Ateco GmbH. Filling connection for vehicles driven by internal combustion engines. 4,341,322, Cl. 220-210.000.

Heinzelmann, Fred J.: *See*—
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Helena Laboratories Corporation: *See—*
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Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See—*
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Hennick, Robert P., to American Optical Corporation. Velocity profile analyzer. 4,341,995, Cl. 324-161.000.
Heringes, James A.: *See—*
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Herlestam, Tore: *See—*
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Herman, Morris, to Raytheon Company. Memory buffer. 4,342,097, Cl. 364-900.000.
Hermanson, Dean E., to Continental Emsco Company. Loading arm. 4,341,242, Cl. 137-615.000.
Herz, Andre M., to Minigrip, Inc. Means for joining flexible fastener strips to film. 4,341,575, Cl. 156-66.000.
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Hicks, Alan A.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Pattern location board game device. 4,341,390, Cl. 273-265.000.
Hignutt, Frank A.; Hignutt, Robert F.; and Hignutt, Kenneth W. Pump control system. 4,341,504, Cl. 417-8.000.
Hignutt, Kenneth W.: *See—*
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Hignutt, Robert F.: *See—*
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Higuchi, Mitsuo; and Miyasaka, Kiyoshi, to Fujitsu Limited. Address buffer circuit. 4,342,103, Cl. 365-230.000.
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Hinze, Adrien G.; Roggeveen, Robert P.; and Meulenberg, Abraham J., to Emery Industries, Inc. Polyamide from diamine, triamine and polycarboxylic acid mixture. 4,341,670, Cl. 528-338.000.
Hiott & Bridges, Inc.: *See—*
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Hiott, Edward R.; and Scheckel, Sara E., to Hiott & Bridges, Inc. Pulverizer. 4,341,356, Cl. 241-169.200.
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Hirai, Kentaro; Matsutani, Shigeru; Ishiba, Teruyuki; and Makino, Itsuo, to Shionogi & Co., Ltd. 4,1-Benzoxazepines and thia analogs thereof. 4,341,704, Cl. 260-243.300.
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Hsi, Peter H. Y., to MPH Ltd. System for building wall construction. 4,341,049, Cl. 52-421.000.

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Imai, Kunio; Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Yoshino, Toshikazu; and Arai, Yasuyuki, to Pioneer Electronic Corporation. Molding compositions and diaphragms, arm pipes and head shells molded therefrom. 4,341,838, Cl. 428-338.000.

Imai, Masumi: *See*—
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Immekus, Karl, to Gesellschaft fur Huttenwerksanlagen mbH. Method of, and cupola furnace for, the introduction of treatment agents into cupola iron melts. 4,341,553, Cl. 75-53.000.

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Inaba, Ritsuo; and Wasa, Kiyotaka, to Matsushita Electric Industrial Co., Ltd. Surface acoustic wave device. 4,342,012, Cl. 333-155.000.

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Institute of Gas Technology: *See*—
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International Standard Electric Corp.: *See*—
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Ishii, Heiichiro, to Clarion Co., Ltd. Refrigeration system. 4,341,086, Cl. 62-225.000.

Ishii, Hiromichi; Matsuzawa, Hideo; Kobayashi, Masao; and Otani, Masato, to Mitsubishi Rayon Company, Limited. Catalytic process for the preparation of unsaturated carboxylic acid. 4,341,900, Cl. 562-532.000.

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ITT Industries, Inc.: *See*—
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Ivanov, Jury P. Shipbuilding method and complex. 4,341,175, Cl. 114-65.00R.

Iwaki, Yoshiyuki, to Mitsubishi Denki Kabushiki Kaisha. Charging generator for vehicle. 4,341,967, Cl. 310-88.000.

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Wyatt, Richard G.; James, Walter D.; Bohl, Edward H.; Theil, Kenneth W.; Saif, Linda J.; Kalica, Anthony R.; Greenberg, Harry B.; Kapikian, Albert Z.; and Chanock, Robert M., 4,341,870, Cl. 435-237.000.

Janczak, Jerzy. Tree-pruning and clearing apparatus. 4,341,017, Cl. 30-381.000.

Janssen, Daniel J. G.: *See*—
Geboers, Josephus J. A.; Janssen, Daniel J. G.; and Bloos, Johannes, 4,341,991, Cl. 323-311.000.

Jarema, Chester P.: *See*—
Wollensak, John C.; Ihrman, Kryn G.; and Jarema, Chester P., 4,341,903, Cl. 564-409.000.

Jarman, David J. Press brake plate lifter table. 4,341,104, Cl. 72-389.000.

Jaworski, Eugene; and Disko, Harry, to Marvin Glass & Associates. Graphic toy. 4,341,035, Cl. 46-135.00R.

Jeno's, Inc.: *See*—
Parson, Roger F., 4,341,136, Cl. 83-158.000.

Jensen, Arthur S.; and Stull, Keefer S., Jr., to Westinghouse Electric Corp. Integrated circuit for chip op/amp interface. 4,341,963, Cl. 307-497.000.

Jerva, Ronald E.: *See*—
Passey, Douglas A.; and Jerva, Ronald E., 4,342,077, Cl. 364-183.000.

Jewett, Robert E., to Hewlett-Packard Company. Switched tuneable frequency multiplier. 4,342,008, Cl. 331-49.000.

Jnoff, Aleksef: *See*—
Bisschops, Yvan; Draguez Tripels de Hault, Emmanuel; Jnoff, Aleksef; and Delaby, Alain, 4,341,644, Cl. 252-8.800.

Joh. Moritz Rump: *See*—
Heide, Helmut, 4,341,094, Cl. 66-117.000.

Johansen, Jack T., to De Forende Bryggerier A/S. Process for recovering enzymes from blood. 4,341,867, Cl. 435-189.000.

Johansson, Ingemar: *See*—
Andersson, Arne; Emanuelsson, Jan; Johansson, Ingemar; and Wahlen, Svante, 4,341,597, Cl. 162-127.000.

John, Gunter; Heyman, Philip M.; and Bortfeld, David P., to RCA Corporation. Variable pitch grooved label for video disc. 4,341,952, Cl. 235-487.000.

Johnson, Frank H.: *See*—
Gordon, Donald J.; Johnson, Frank H.; Schick, George L.; and Smart, J. David, 4,341,393, Cl. 280-47.260.

Johnson, Johnny L., to Ruble, Charles H. Folding camp table. 4,341,164, Cl. 108-67.000.

Johnson, Mark, to Max-Planck-Gesellschaft zur Forderung d. Wissenschaften e. V. Fiber optical transmission filter with double-refraction element. 4,341,442, Cl. 350-96.300.

Johnson, Michael R.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,341,906, Cl. 568-328.000.

Johnson, Ralph E., to Singer Company, The. Thread handling device for lockstitch sewing machines. 4,341,171, Cl. 112-250.000.

Jones, Gordon H.: *See*—
Nestor, John J.; Jones, Gordon H.; and Vickery, Brian H., 4,341,767, Cl. 424-177.000.

Jones & Laughlin Steel Incorporated: *See*—
Koros, Peter J.; and Petrushka, Robert G., 4,341,554, Cl. 75-58.000.

Jorgensen, Allen R.: *See*—
Leanna, Dale D.; Jorgensen, Allen R.; and Wittkopf, Eugene W., 4,341,056, Cl. 53-529.000.

Josemans, Leo J. M., to Stackpole Components Company. Slide switch. 4,341,935, Cl. 200-252.000.

Jost, Max, to Ciba-Geigy Corporation. 1-Hydroxy-4-heteroarylaminoanthraquinones. 4,341,896, Cl. 548-143.000.

Joubert S.A.: *See*—
Liberge, Guy, 4,340,998, Cl. 24-130.000.

Ju, Kochan: *See*—
Hu, Hung L.; and Ju, Kochan, 4,342,098, Cl. 365-36.000.

Jung, Alfred K.; Turczyk, Michael; and Weil, Edward D., to Stauffer Chemical Company. Dihaloneopentyl silicate flame retardants in plastic formulations. 4,341,692, Cl. 524-263.000.
Jung, Rolf: *See—*
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Kabushiki Kaisha Komatsu Seisakusho: *See—*
Sakamoto, Masaaki, 4,341,133, Cl. 74-733.000.
Kabushiki Kaisha Kubota Seisakusho: *See—*
Hara, Minoru, 4,341,342, Cl. 233-1.00A.
Kabushiki Kaisha Neriki: *See—*
Daicho, Norio; and Yonezawa, Keitaro, 4,341,245, Cl. 141-18.000.
Kabushiki Kaisha Sankyo Seiki Seisakusho: *See—*
Komatsu, Fumito; and Muramatsu, Kenzi, 4,341,142, Cl. 84-95.00R.
Kabushiki Kaisha Suwa Seikosha: *See—*
Takei, Katsumori; Kanbe, Sadao; and Shionozaki, Yoshio, 4,341,652, Cl. 252-299.500.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Kondo, Kanetaka; Morita, Takayuki; and Ushino, Masashi, 4,341,067, Cl. 57-275.000.
Kabushiki Kaisha Yaskawa Denki Seisakusho: *See—*
Maruko, Yutaka; Sako, Susumu; and Kobayashi, Tamotu, 4,341,973, Cl. 310-268.000.
Kaeppner, Werner M., to CIP Inc. Dilitho printing image heating. 4,341,156, Cl. 101-141.000.
Kageyama, Yoichi; Hatano, Masakatsu; Koyama, Toru; Kaneko, Takao; Murayama, Masayosi; and Oshima, Kazunori, to Mitsubishi Chemical Industries, Limited. Catalytic composition. 4,341,659, Cl. 252-435.000.
Kahl, Melchior: *See—*
Warncke, Heinz; Kahl, Melchior; Meyer, Hans H.; and Schurmeyer, Paul, 4,341,108, Cl. 73-23.000.
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Kalinovsky, Villen V.: *See—*
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Kallman, Mathew R., to Pilgrim Electric Co. Bidirectional power line filter. 4,342,013, Cl. 333-181.000.
Kaltenbach & Voight GmbH & Co.: *See—*
Kuhn, Bernhard; and Bochtler, Eugen, 4,341,519, Cl. 433-122.000.
Kamata, Keiichiro, to Dainippon Screen Seizo Kabushiki Kaisha. Contact screen for making color separation halftone blocks. 4,342,046, Cl. 358-75.000.
Kanbe, Junichiro: *See—*
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Kanbe, Sadao: *See—*
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Kanegae, Hidetoshi: *See—*
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Kaneko, Takao: *See—*
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Kanno, Hideo; and Suzuki, Yoshiki, to Nippon Kogaku K.K. Lens cap. 4,341,436, Cl. 350-65.000.
Kapikian, Albert Z.: *See—*
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Kaplan, Albert S.; Kaplan, Tamar B.; and Chen, Anthony B., to Vanderbilt University. Diagnostic reagent for herpes simplex virus encephalitis. 4,341,754, Cl. 424-1.000.
Kaplan, Howard I., to Reynolds Metals Company. Alumina reduction cell. 4,341,611, Cl. 204-243.00R.
Kaplan, Tamar B.: *See—*
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Kareev, Jury P.: *See—*
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Karnas, Joe. Offshore reef. 4,341,489, Cl. 405-35.000.
Kashiwagi, Kazuo; Arai, Toshio; Toda, Takao; Shirai, Masanari; and Yanagi, Masaaki, to Canon Kabushiki Kaisha. Image reproducing apparatus. 4,341,463, Cl. 355-14.0CH.
Kashiwakura, Toshimi: *See—*
Takeda, Keiso; Inouye, Shozo; and Kashiwakura, Toshimi, 4,341,191, Cl. 123-445.000.
Kasugayama, Yukio; Terasawa, Koji; and Hattori, Yoshihumi, to Canon Kabushiki Kaisha. Ink jet type recording apparatus. 4,342,041, Cl. 346-140.00R.
Kaswinkel, Karl D.: *See—*
Harder, Ursula M.; Kaswinkel, Karl D.; Gould, James W.; West, Jon K.; and Wynn, Michael J., 4,341,636, Cl. 210-662.000.
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Katcher, Jay H.: *See—*
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Katchman, Arthur, to General Electric Company. Low resistivity thermoplastic compositions. 4,341,882, Cl. 525-68.000.
Katsuto, Takayuki; Endo, Shunzo; Doi, Hideaki; and Murayama, Naohiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Laminar thermoplastic resin structure. 4,341,837, Cl. 428-336.000.
Kawabata, Takashi: *See—*
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Kawada, Minoru, to Olympic Fishing Tackles Co., Ltd. Fishing reel clutch. 4,341,366, Cl. 242-220.000.
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Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
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Kawai, Shinji: *See—*
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Kawasaki Jukogyo Kaikan Kaisha: *See—*
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Kawasaki, Tetsuro; and Toda, Hiromichi, to Anritsu Electric Company Limited. Power level measurement system. 4,341,994, Cl. 324-132.000.
Kayane, Yutaka: *See—*
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Kayser-Roth Hosiery, Inc.: *See—*
Cassidy, Edward L., Sr.; Cothran, William B.; and Safrit, Sam C., 4,341,097, Cl. 66-187.000.
Safrit, Sam C.; Farrell, Roscoe M.; and Shields, Harper, 4,341,096, Cl. 66-185.000.
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Keane, John J.; and Zopf, Richard F., to General Electric Company. Emulsion for making dry film resists. 4,341,859, Cl. 430-270.000.
Keaveney, William P.: *See—*
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Keeler Corporation: *See—*
Stelma, Gerard N., 4,341,444, Cl. 350-289.000.
Keeling, Walter W. Self-sustaining land irrigating and hydroelectric power generating system. 4,341,490, Cl. 405-36.000.
Keller, Hartmut: *See—*
Lauterbach, Richard; and Keller, Hartmut, 4,341,816, Cl. 427-34.000.
Keller, Jakob, to BBC Brown, Boveri & Company, Ltd. Method and apparatus for extinguishing an electric arc in a circuit breaker. 4,341,933, Cl. 200-148.00R.
Keller, Morris C.: *See—*
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Kelman, Charles D. Intraocular lens. 4,340,979, Cl. 3-13.000.
Kelsey-Hayes Company: *See—*
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Kelyman, John, Jr.: *See—*
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Kemmler, Gerhard; Wieczorek, Herbert; and Plessing, Jurgen, to Kernforschungszentrum Karlsruhe Gesellschaft mit beschrakter Haftung. Decomposition and oxidation system. 4,341,738, Cl. 422-184.000.
Kempf & Co. AG Forder- und Lagertechnik: *See—*
Rohner, Karl, 4,341,027, Cl. 37-197.000.
Kemski, Michael B., to Minnesota Mining and Manufacturing Company. Fog-resistant, heat-sealable film. 4,341,825, Cl. 428-35.000.
Kendall Co., The: *See—*
Cohen, Lawrence B., 4,341,213, Cl. 128-284.000.
Leong, Koon-Wah, 4,341,844, Cl. 428-492.000.
Schaar, Charles H., 4,341,209, Cl. 128-156.000.
Kerby, Jacques C., to Mobil Oil Corporation. Seal for floating roof tanks. 4,341,323, Cl. 220-224.000.
Keritsis, Gus D.; and Lowitz, David A., to Philip Morris Incorporated. Method for employing tobacco dust in a paper-making type preparation of reconstituted tobacco and the smoking material produced thereby. 4,341,228, Cl. 131-354.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
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Kernforschungszentrum Karlsruhe Gesellschaft mit beschrakter Haftung: *See—*
Kemmler, Gerhard; Wieczorek, Herbert; and Plessing, Jurgen, 4,341,738, Cl. 422-184.000.
Kerr, John H. Spiral type one-way clutch assembly. 4,341,294, Cl. 192-45.000.

Keyboard Company, The: *See*—
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Khoudokormoff, Basile: *See*—
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Kiessling, John B.: *See*—
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Kiikka, Oliver A.; and Connors, Keith A., to Standard Oil Company, The. Reducing carboxy reactivity in coke. 4,341,751, Cl. 423-461.000.
Kikuchi, Noribumi; Suzuki, Yasuo; Sugizawa, Taijiro; and Washizu, Fumio, to Mitsubishi Kinzoku Kabushiki Kaisha. Coated super-hard alloy articles. 4,341,834, Cl. 428-216.000.
Kim, Dong H.; and Bell, Stanley C., to American Home Products Corporation. α-[(Alkylamino)-methyl]-β-aryloxy-benzeneethanols exhibiting antiarrhythmic activity. 4,341,718, Cl. 260-501.180.
Kim, Kyoung, to Advanced Micro Devices, Inc. Input protection device for integrated circuits. 4,342,045, Cl. 357-41.000.
Kimberly-Clark Corporation: *See*—
Fries, Donald M.; and Ring, David F., 4,341,214, Cl. 128-285.000.
Kimble, James B.: *See*—
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Kimura, Takao: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,341,776, Cl. 424-246.000.
King, Arthur S. Liquid treater having electrical charge injection means. 4,341,617, Cl. 204-302.000.
King Instrument Corporation: *See*—
Neathery, David O.; and Riggs, Edward J., 4,341,362, Cl. 242-183.000.
Kingsdown Medical Consultants Limited: *See*—
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Kinoshita, Harumi: *See*—
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Kirst, Herbert A.; and Ose, Earl E., to Eli Lilly and Company. Method of controlling Pasteurella infections. 4,341,771, Cl. 424-181.000.
Kirst, Herbert A.: *See*—
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Kishima, Yukihiro: *See*—
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Kitamura, Masatsugu; Ono, Tsuyoshi; and Onoye, Hideo, to Victor Company of Japan, Limited. Variable speed tone arm control system. 4,342,108, Cl. 369-216.000.
Kitamura, Masatsugu; Onoye, Hideo; Ohno, Fumiaki; Ono, Tsuyoshi; Kishima, Yukihiro; and Morita, Yutaka, to Victor Company of Japan Ltd. Record disc playing apparatus with automatic cancellation of inside force on tone arm. 4,342,110, Cl. 369-252.000.
Kitano, Hisao: *See*—
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, 4,341,665, Cl. 252-522.00R.
Klein, Rudiger, to Gutehoffnungshutte Sterkrade A.G. Apparatus for the generation of compressed air. 4,341,506, Cl. 417-362.000.
Kleiss, Joachim, to Fulgeritwerke Seelze und Eichriede in Luthe bei Hannover Adolf Oesterheld GmbH & Co. Kommanditgesellschaft. Shapes for windows or doors. 4,341,831, Cl. 428-188.000.
Klenk, Herbert: *See*—
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Kleva, Jacob J. Game board apparatus having removable playing piece movement areas. 4,341,386, Cl. 273-239.000.
Kline, Larry H. Lubricating object applicator. 4,341,211, Cl. 128-261.000.
Kling, Jarrett B., to Teknational Industries Inc. Mounting assembly for semiconductor devices and particularly power transistors. 4,342,068, Cl. 361-386.000.
Knabel, Walter: *See*—
Marker, Hannes; Knabel, Walter; and Eichweber, Gerhard, 4,341,121, Cl. 73-862.020.
Knapp, Heinrich; Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; Jaggle, Gunther; and Schelhas, Peter, to Robert Bosch GmbH. Fuel injection system. 4,341,192, Cl. 123-452.000.
Knight, Ernest, Jr.: *See*—
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Knowles, Jeremy R.: *See*—
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Knowles, William F.; Knowles, Larry F.; and Oliver, H. LeRoy. Lounge chair. 4,341,420, Cl. 297-280.000.
Kobayashi, Fumio: *See*—
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Kobayashi, Kazuho: *See*—
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Kobayashi, Keisuke: *See*—
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Kobayashi, Kozo: *See*—
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Kobayashi, Masao: *See*—
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Kobayashi, Tamotu: *See*—
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Kochi, Hiromu: *See*—
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Koenig-Electronic Friedrich W. Koenig: *See*—
Raemisch, Reinhard; and Hoffmann, Arthur H., 4,341,123, Cl. 73-862.090.
Koepke, Gunther; Frenken, Hans; and Friedsam, Josef, to Agfa-Gevaert Aktiengesellschaft. Process and an apparatus for continuously filtering liquids. 4,341,642, Cl. 210-767.000.
Koestner, Joseph H.: *See*—
Caccoma, George A.; Koestner, Joseph H.; O'Neill, Brian C.; and Tappen, Frank M., 4,342,090, Cl. 364-491.000.
Kohaut, John E. Insert device. 4,341,919, Cl. 174-48.000.
Kohlhage, Hermann, to Nixdorf Computer AG. Portable certificate magazine. 4,341,100, Cl. 70-63.000.
Kohman, Wayne E.; and Maleri, E. Joseph, to Perkin-Elmer Corporation, The. Load-lock vacuum chamber. 4,341,582, Cl. 156-345.000.
Kohyama, Mitsuaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Electronic copying machine. 4,341,460, Cl. 355-13.000.
Kokusai Denshin Denwa Co., Ltd.: *See*—
Seki, Norio; Yatsuzuka, Yohtaro; and Sakaguchi, Haruo, 4,341,438, Cl. 350-96.160.
Komatsu, Fumito; and Muramatsu, Kenzi, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Music box. 4,341,142, Cl. 84-95.00R.
Komatsu, Michiyasu: *See*—
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Komiya, Kazumi: *See*—
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Kommanditgesellschaft "ALBERTA" Chemische Fabrik GmbH & Co.: *See*—
Zopff, Hans; and Muller, Hans-Ekkehard, 4,341,745, Cl. 423-210.000.
Komoriya, Kiyoshi. Discrimination apparatus for extracting maximum-value output from a plurality of signals and indexing the relevant channel. 4,341,961, Cl. 307-355.000.
Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, to Mitsubishi Denki Kabushiki Kaisha. Glow discharge heating apparatus. 4,341,947, Cl. 219-383.000.
Kondo, Kanetaka; Morita, Takayuki; and Ushino, Masashi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Bobbin holding device in a doffing apparatus. 4,341,067, Cl. 57-275.000.
Konishi, Kazuo; and Matsuura, Kazuho, to Takeda Chemical Industries, Ltd. Pyrimidine derivatives and agricultural uses. 4,341,782, Cl. 424-251.000.
Konishi, Masataka; Miyaki, Takeo; Tsukiura, Hiroshi; and Kawaguchi, Hiroshi, to Bristol-Myers Company. Antibiotic compounds. 4,341,768, Cl. 424-177.000.
Kopena, David M., to Owens-Corning Fiberglas Corporation. Method and apparatus for separating rolls of web material. 4,341,003, Cl. 29-239.000.
Koppe, Herbert: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Hoefke, Wolfgang; and Pichler, Ludwig, 4,341,788, Cl. 424-273.00R.
Korant, Bruce D.: *See*—
Ganfield, David J.; Hunkapiller, Michael W.; Knight, Ernest, Jr.; and Korant, Bruce D., 4,341,761, Cl. 424-85.000.
Korenberg, Jakob, to York-Shipley, Inc. High turndown ratio fluidized bed reactor and method of operating the reactor. 4,341,515, Cl. 432-15.000.
Korling, Torkel. Triaxial universal camera mount. 4,341,452, Cl. 354-293.000.
Koros, Peter J.; and Petrushka, Robert G., to Jones & Laughlin Steel Incorporated. Process for desulfurizing steel. 4,341,554, Cl. 75-58.000.
Kosarzecki, Constantine, to Modular Controls Corporation. Hydraulic sequencing valve. 4,341,148, Cl. 91-356.000.
Koshida, Daikichi; Sigisawa, Ko; Majima, Junji; and Hattori, Ryuichi. Method for producing dry fruit chip. 4,341,803, Cl. 426-242.000.

Koshlyak, Leonid L.; Kareev, Jury P.; Romankov, Evgeny A.; Zotov, Sergei N.; Belopolsky, Marx S.; and Kalinovsky, Villen V. Method for the manufacture of ceramic products. 4,341,724, Cl. 264-27.000.

Koutonen, Pauli, to Oy Wartsila Ab. Arrangement for wrapper feeding to big paper rolls. 4,341,586, Cl. 156-518.000.

Kowalski, Daniel J.; and Mareydt, Ray G., to Four Star Corporation. Stanchion assembly. 4,341,332, Cl. 224-326.000.

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Matsuyama, Shigeru; Koyama, Masaharu; and Sato, Yukihiro, 4,341,445, Cl. 350-344.000.

Koyama, Toru: *See—*
Kageyama, Yoichi; Hatano, Masakatsu; Koyama, Toru; Kaneko, Takao; Murayama, Masayosi; and Oshima, Kazunori, 4,341,659, Cl. 252-435.000.

Kracklauer, John J.; and Sparkes, Charles J., to Syntex (U.S.A.) Inc. Flexible polyvinyl chloride plastics having improved flame retardancy and reduced smoke generating properties. 4,341,881, Cl. 524-176.000.

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Krantz, Karl W., to General Electric Company. Compositions and method for improving the properties of liquid media. 4,341,684, Cl. 523-175.000.

Kremer, Ross A.; and Mansueto, Leopoldo C., Jr., to Rhone-Poulenc Agrochimie. Vapor phase dechlorination process. 4,341,899, Cl. 560-103.000.

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Marcantonio, Arnold F.; Kress, Paul J.; and Powers, John W., 4,341,878, Cl. 524-3.000.

Kreuer, Karl D.; and Schulte, Klaus, to Bayer Aktiengesellschaft. Process for the production of a foamable mixture from at least two fluid, foam forming reactants and aggregates. 4,341,876, Cl. 521-170.000.

Krickovich, Eli G. Emergency escape device. 4,341,285, Cl. 182-6.000.

Kronschnabel, William J.: *See—*
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Krueger, Roland; Proske, Joachim; Rosner, Ortwin; and Swarofsky, Walter, to Rollei-Werke Franke & Heidecke GmbH & Co. KG. Camera having depth of focus indicating means. 4,341,451, Cl. 354-289.000.

Kruger, Hans-Rudolf; Arndt, Friedrich; Baumert, Dietrich; and Rusch, Reinhart, to Schering AG. 1,2,3,-Thiadiazole-5-carboxylic acid derivatives. 4,341,551, Cl. 71-90.000.

Kruszona, Edward G., to General Electric Company. Method of roller inserting filler material in crevices. 4,341,007, Cl. 29-451.000.

Ku, Chung C.; and Yeh, Ching H. Construction for a cylinder lock and key. 4,341,102, Cl. 70-358.000.

Kubo, Osamu; Ido, Tadashi; Nomura, Tutomu; and Inomata, Koichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing magnetic powder for high density magnetic recording. 4,341,648, Cl. 252-62.630.

Kubota, Ltd.: *See—*
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Fujinami, Susumu; Miyamoto, Hiroaki; Morimine, Ryoichi; Fukuzawa, Toshiki; Ueda, Toshihiko; Umakoshi, Shoji; and Tokunaga, Kiyohiko, 4,341,628, Cl. 210-101.000.

Kuehni, Rolf G.; and Cox, Thomas C., to Mobay Chemical Corporation. Levelling agent and process of levelling for the disperse dyeing of hydrophobic materials. 4,341,526, Cl. 8-610.000.

Kuemmerer, Helmut; Moser, Theo; and Genstorfer, Adolf, to Robert Bosch GmbH. Dispensing apparatus for aseptic measurement and filling of a fluid product. 4,341,329, Cl. 222-275.000.

Kuhn, Bernhard; and Bochtler, Eugen, to Kaltenbach & Voight GmbH & Co. Dental angled vibration member. 4,341,519, Cl. 433-122.000.

Kuhne, Norbert; Leischner, Hasso; Rahse, Wilfried; and Wust, Willi, to Henkel Kommanditgesellschaft auf Aktien. Preparation of alkali cellulose having a low water content. 4,341,892, Cl. 536-101.000.

Kulper, Klaus. Electrical condenser with a dielectric of gas under pressure. 4,342,066, Cl. 361-278.000.

Kumagai, Shumi: *See—*
Suzuki, Kazufumi; Kumagai, Shumi; Ochiai, Yuetsu; and Mizoguchi, Akira, 4,342,051, Cl. 358-283.000.

Kumagai, Teruo: *See—*
Mori, Toshikatsu; Kumagai, Teruo; Matsuda, Shimpei; and Nakajima, Fumito, 4,341,753, Cl. 423-569.000.

Kumagi, Shigeki, to Tokyo Shibaura Denki Kabushiki Kaisha. Integrated circuit device for clock. 4,342,092, Cl. 364-569.000.

Kummer, Werner: *See—*
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Kuntz, David W.: *See—*
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Kuo, Chang-Kiang, to Texas Instruments Incorporated. Electrically erasable programmable MNOS read only memory. 4,342,099, Cl. 365-104.000.

Kuo, Chang-Kiang, to Texas Instruments Incorporated. Implant programmable metal gate MOS read only memory. 4,342,100, Cl. 365-104.000.

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Saito, Masumi; Hirai, Eiichi; Endo, Masao; and Nishino, Toru, 4,341,560, Cl. 106-87.000.

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Katsuto, Takayuki; Endo, Shunzo; Doi, Hideaki; and Murayama, Naohiro, 4,341,837, Cl. 428-336.000.

Kurihara, Kozo; Fukazawa, Toshio; Ichikawa, Izuo; Ikegami, Yoshihiko; Fukiyama, Naohiko; and Ikeda, Masaru, to Sankyo Company Limited. Protective coating compositions. 4,341,563, Cl. 106-171.000.

Kurisaki, Tetuo; Horiike, Yasuhiro; and Yamazaki, Takashi, to Tokuda Seisakusyo, Ltd.; and Tokyo Shibaura Denki Kabushiki Kaisha. Plasma etching method for aluminum-based films. 4,341,593, Cl. 156-643.000.

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Fushimi, Takehiko; Kawai, Shinji; and Kuwana, Kazutaka, 4,340,980, Cl. 4-448.000.

Kuznetz, Lawrence. Support brassiere. 4,341,219, Cl. 128-498.000.

Kuzunuki, Soshiro; Hirasawa, Kotaro; Imai, Masumi; Yuminaka, Takeo; Sakata, Kazuhiro; and Yoneda, Kanji, to Hitachi, Ltd. Elevator control apparatus. 4,341,287, Cl. 187-29.00R.

Kvaerner Brug A/S: *See—*
Ambli, Nils, 4,341,959, Cl. 290-53.000.

Kyles, Ronald H.; and Woodard, Richard B., to NCR Corporation. Method and circuitry for synchronizing the read and update functions of a timer/counter circuit. 4,341,950, Cl. 235-92.0EA.

Kyo, Suizo: *See—*
Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,341,841, Cl. 428-414.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Nakanishi, Toru; and Machida, Yozo, 4,341,868, Cl. 435-191.000.

LaBeau, Gary A.; and Bixby, James A., to Eastman Technology, Inc. Skew calculation using information recorded along a single timing track. 4,342,057, Cl. 360-76.000.

LaBenz, Gary F. Sewer manhole channel construction and method. 4,341,236, Cl. 137-363.000.

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Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, 4,341,784, Cl. 424-256.000.

Laboratori Prophin S.p.A.: *See—*
Reiner, Alberto, 4,341,798, Cl. 424-319.000.

Laeis-Werke AG: *See—*
Croseck, Hans-Henning; and Jung, Rolf, 4,341,510, Cl. 425-149.000.

Lagasse, Guy. Chimney fire extinguisher. 4,341,267, Cl. 169-54.000.

Lahti, Abbott W.; and Russell, Stephen R., to Power Systems, Inc. Simultaneous independent control system for electric motors. 4,341,982, Cl. 318-51.000.

Laitinen, Heikki, to Oy Partek Ab. Loading equipment. 4,341,500, Cl. 414-498.000.

Laitram Corporation, The: *See—*
Lapeyre, James M., 4,342,031, Cl. 340-756.000.

Lal, Joginder; and Walters, Sandra J., to Goodyear Tire & Rubber Company, The. Composition and method of improving the unvulcanized properties of blends containing reclaimed rubber. 4,341,667, Cl. 525-211.000.

Lampe, Warren R., to General Electric Company. Method of coating automotive parts with silicone compositions. 4,341,842, Cl. 428-450.000.

Land, Jerry E.: *See—*
McMullan, James P.; Lindsay, Rudy E.; and Land, Jerry E., 4,340,983, Cl. 5-93.00R.

Landes, James L., to Texas Instruments Incorporated. Ultrasonic bond energy monitor. 4,341,574, Cl. 156-64.000.

Landis, Norris J., to Standard Oil Company. Urea hydrolysis. 4,341,640, Cl. 210-752.000.

Landreau, Jean; Delpech, Philippe; and Bouley, Jean-Claude. Process for producing an injection laser and laser obtained by this process. 4,341,570, Cl. 148-1.500.

Landrigan, William F.: *See—*
Ferguson, Susan P.; and Landrigan, William F., 4,341,217, Cl. 128-290.00W.

Landsness, Clifford A.; Rinker, William R.; Barnes, Thomas E.; and White, Maurice E., to B. F. Goodrich Company, The. Processing vinyl extrudate. 4,341,727, Cl. 264-145.000.

Lang, Walter; Muller, Ortwin; and Neidlinger, Alfons, to Carl Zeiss-Stiftung. Stereoscopic microscope for multiple observation. 4,341,435, Cl. 350-35.000.

Lang, Werner: *See—*
Zander, Rolf; Lang, Werner; and Wolf, Hans U., 4,341,527, Cl. 23-230.00B.

Langejan, Arend; and Khoudokormoff, Basile, to Gist-Brocades N.V. Active dried baker's yeast. 4,341,871, Cl. 435-256.000.

Langer, Robert S., Jr.; Linhardt, Robert; Cooney, Charles L.; and Galliher, Parrish M., to Massachusetts Institute of Technology. Process for producing heparinase. 4,341,869, Cl. 435-232.000.

Lapeyre, James M., to Laitram Corporation, The. Liquid crystal and numerical display devices. 4,342,031, Cl. 340-756.000.

Large, George B.; and Buren, Lawrence L., to Stauffer Chemical Company. Phosphonium salts of N-phosphonomethylglycine and their use as herbicides and plant growth regulants. 4,341,549, Cl. 71-86.000.

Larrere, Yves: *See—*
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Larson, Daniel A.: *See—*
Thornton, William A., Jr.; and Larson, Daniel A., 4,341,978, Cl. 313-487.000.

Larson, Robin R., to Tektronix, Inc. Protection circuit for a data driver. 4,342,065, Cl. 361-93.000.

Lassle, Edwin: *See*—
Steinle, Gunter; and Lassle, Edwin, 4,341,930, Cl. 179-115.50R.

Lauener, Wilhelm F., to W. F. Lauener AG. Method for speed control of a continuous metal strip casting machine and rolling mill arrangement, and system controlled according to this method. 4,341,259, Cl. 164-454.000.

Laurent, Jean; Monnet, Bernard; and Pertuis, Philippe, to Pont-a-Mousson. Device for automatic adjustment of an injection molding press. 4,341,511, Cl. 425-150.000.

Lauterbach, Richard; and Keller, Hartmut, to Siemens Aktiengesellschaft. Method for attaching disc- or plate-shaped targets to cooling plates for sputtering systems. 4,341,816, Cl. 427-34.000.

Lavan, Zalman: *See*—
Gidaspow, Dimitri; Lavan, Zalman; and Onischak, Michael, 4,341,539, Cl. 55-278.000.
Mei, Viung C.; Lavan, Zalman; and Chaturvedi, Sushil K., 4,341,088, Cl. 62-239.000.

Lay, James R.: *See*—
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Leanna, Dale D.; Jorgensen, Allen R.; and Wittkopf, Eugene W., to Magna-Graphics Corporation. Machine for compression band packaging. 4,341,056, Cl. 53-529.000.

Leathers Chemical Company, Limited: *See*—
Ellis, John D.; Crichton, George; Godwin, Millard C.; and Morris, George C., 4,341,739, Cl. 422-207.000.

Lebel, Joseph A.: *See*—
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Lechler, Gerhard B.; and Richter, Otto G., to Lechler, Gerhard B. Force measuring device. 4,341,122, Cl. 73-862.040.

Lee, Yoon C.; and Trementozzi, Quirino A., to Monsanto Company. Rubber modified terpolymers with improved heat distortion resistance. 4,341,695, Cl. 524-342.000.

Leedom, Marvin A.: *See*—
Gorog, Istvan; Leedom, Marvin A.; and Wittke, James P., 4,341,472, Cl. 356-399.000.

Lefevre, Joseph D.: *See*—
McIntyre, James A.; Phillips, Robert F.; and Lefevre, Joseph D., 4,341,606, Cl. 204-98.000.

LeFiell Company: *See*—
Cook, Franklin M., 4,340,993, Cl. 17-25.000.

LeGrand, Donald G., to General Electric Company. Method of upgrading rock and treated rock obtained therefrom. 4,341,824, Cl. 428-15.000.

LeHara Manufacturing Co., Inc.: *See*—
Gerzanich, Michael, 4,341,059, Cl. 56-15.800.

Leischner, Hasso: *See*—
Kuhne, Norbert; Leischner, Hasso; Rahse, Wilfried; and Wust, Willi, 4,341,892, Cl. 536-101.000.

Leitch, Paul A.; and Shinn, Thomas W., to Warner & Swasey Company, The. Material forming apparatus. 4,341,137, Cl. 83-639.000.

Lemelson, Jerome H. Weighing apparatus and method. 4,342,038, Cl. 346-9.000.

Lemmon Company: *See*—
Scheindlin, Stanley, 4,341,783, Cl. 424-253.000.

Lennox Industries, Inc.: *See*—
Ramakrishnan, Rengaswamy, 4,341,090, Cl. 62-324.100.

Leong, Koon-Wah, to Kendall Company, The. Article having organophosphonitrile rubber coating bonded to natural or synthetic rubber and method of making. 4,341,844, Cl. 428-492.000.

Leroy, Jules: *See*—
Bauer, Daniel; Leroy, Jules; and Beck, Jean-Paul, 4,341,229, Cl. 132-7.000.

Leshik, Richard R.; and Katcher, Jay H., to General Foods Corporation. Stabilized starch composition. 4,341,809, Cl. 426-576.000.

Lester, Dozier. Food for frogs. 4,341,800, Cl. 426-1.000.

Levinstein, Hyman J.: *See*—
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Levolor Lorentzen, Inc.: *See*—
Schaller, Maurice; Debs, Victor; Abate, Leo; Dodich, James; Rodriguez, Regino; and Anderle, Joseph A., 4,341,254, Cl. 160-172.000.

Lewis, Charles W., to PPG Industries, Inc. Fabricating laminated safety glass without an autoclave. 4,341,576, Cl. 156-106.000.

Lewis, Peter J.: *See*—
Cruz-Uribe, Antonio S.; Lewis, Peter J.; and Miller, Peter T., 4,342,042, Cl. 346-140.00R.

Liang, Wei C., to Union Carbide Corporation. Asymmetrical bis-carbamate compounds. 4,341,795, Cl. 424-300.000.

Liberge, Guy, to Joubert S.A. Hook for elastic cable. 4,340,998, Cl. 24-130.000.

Libit, Sidney M. Tampering indicating bottle cap and bottle. 4,341,320, Cl. 215-341.000.

Liebermann, Howard H.; Frischmann, Peter G.; and Rosenberry, George M., Jr., to General Electric Company. Helical metallic ribbon for continuous edge winding applications. 4,341,845, Cl. 428-592.000.

Liet, Cornelis H.: *See*—
Liet, Fredericus; and Liet, Cornelis H., 4,341,354, Cl. 241-101.700.

Liet, Fredericus; and Liet, Cornelis H., to Triolet Silo Europe BV. Device for cutting out and transporting a silage block. 4,341,354, Cl. 241-101.700.

Lightsey, Martin F., to American Safety Razor Company. Disposable razor package. 4,341,306, Cl. 206-372.000.

Lighty, Paul E.; Black, Philip W.; and Irven, John, to International Standard Electric Corp. Method of making solid preforms and optical fibers drawn therefrom. 4,341,441, Cl. 350-96.300.

Lignes Telegraphiques et Telephoniques: *See*—
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Lilachim: *See*—
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Liller, Delbert I. Method of coal washing at low speed pumping. 4,341,352, Cl. 241-21.000.

Limousin, Jean-Louis, to Pet, Inc. Wrapping machine. 4,341,057, Cl. 53-553.000.

Lindall, Arnold W., to Immuno Nuclear Corporation. Parathyroid radioimmunoassay. 4,341,755, Cl. 424-1.000.

Lindblad, Stig M. Locking means for safety belts. 4,341,360, Cl. 242-107.40A.

Linde Aktiengesellschaft: *See*—
Gregor, Carl-Heinz; Reimann, Hans; and Wildmoser, Alfred, 4,341,632, Cl. 210-608.000.
Meinass, Helmut; and Volz, Bernhard, 4,341,234, Cl. 137-110.000.
Walder, Thomas E., 4,341,633, Cl. 210-614.000.

Lindsay, Rudy E.: *See*—
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Lindvay, Michael W., to Great Lakes Chemical Corporation. Poly(-brominated phenylene oxide) and flame-retarded high impact polystyrene composition. 4,341,890, Cl. 528-212.000.

Linhardt, Robert: *See*—
Langer, Robert S., Jr.; Linhardt, Robert; Cooney, Charles L.; and Galliher, Parrish M., 4,341,869, Cl. 435-232.000.

Link, Joseph, to Mostek Corporation. Integrated circuit package. 4,342,069, Cl. 361-401.000.

Liquid Modulators, Inc.: *See*—
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Lisiecki, Robert E., to Ex-Cell-O Corporation. Container with infolded bottom closure. 4,341,340, Cl. 229-37.00R.

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Little Launcher, Inc.: *See*—
Little, Ronald L., 4,341,030, Cl. 42-1.00F.

Little, Ronald L., to Little Launcher, Inc. Hunting dog training device. 4,341,030, Cl. 42-1.00F.

Litton Industrial Products, Inc.: *See*—
Turner, David L., 4,341,297, Cl. 198-408.000.

Liu, Chia-tsun; Demczyk, Brian G.; and Gongaware, Paul R., to United States of America, Energy. Bifunctional air electrodes containing elemental iron powder charging additive. 4,341,848, Cl. 429-27.000.

Lizenby, James R., to Kelsey-Hayes Company. Method of hot consolidating powder with a recyclable container material. 4,341,557, Cl. 75-223.000.

Logue, Charles C.: *See*—
Britt, James M.; and Logue, Charles C., 4,341,561, Cl. 106-87.000.

Lombardi, Aldolfo. Hinge catch. 4,340,992, Cl. 16-349.000.

Long, Leonard L. Construction module. 4,341,050, Cl. 52-589.000.

L'Oreal: *See*—
Bauer, Daniel; Leroy, Jules; and Beck, Jean-Paul, 4,341,229, Cl. 132-7.000.

Loth, John L.; Smith, William C.; and Friggens, Gary R., to United States of America, Energy. Slurry atomizer for a coal-feeder and dryer used to provide coal at gasifier pressure. 4,341,530, Cl. 48-73.000.

Lovett, Eva G.: *See*—
Buriks, Rudolf S.; and Lovett, Eva G., 4,341,887, Cl. 526-263.000.

Lowdermilk, Loren L., to International Paper Company. Apparatus for dispensing substantially rimless articles. 4,341,325, Cl. 221-211.000.

Lowitz, David A.: *See*—
Keritsis, Gus D.; and Lowitz, David A., 4,341,228, Cl. 131-354.000.

Lowry, Joseph M.; and Griffin, Ernest E. Carriage for a grass trimming device. 4,341,060, Cl. 56-17.500.

Loy, Fred W.; and Senior, Robert B., to Cooper Industries, Inc. Method and apparatus for interconnecting pairs of terminals with a pretwisted pair of insulated wires. 4,341,014, Cl. 29-857.000.

Lu, Chen-i: *See*—
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Lu, Wei C., to Eastman Kodak Company. Method for flash fusing toner images. 4,341,854, Cl. 430-124.000.

Lucas Industries Limited: *See*—
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Smith, George W., 4,341,289, Cl. 188-73.390.

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Luckman, Edwin R.: *See*—
Martin, Jeffrey E.; Vozella, Albert F.; Watts, Golden F.; and Luckman, Edwin R., 4,341,668, Cl. 524-297.000.

Luh, Howard H.: *See*—
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Lummus Company, The: *See*—
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Lundqvist, Ulf: *See*—
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Lutz, Lauralee A. Fluoresceable composition and method of determining fluid flow. 4,341,223, Cl. 128-666.000.

Lynes, Inc.: *See—*
Craig, Gene C., 4,341,266, Cl. 166-317.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
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M. Lowenstein Corporation: *See—*
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Maak, Norbert: *See—*
Friedemann, Wolfgang; Maak, Norbert; and Feulner, Kurt, 4,341,559, Cl. 106-38.350.

MacDowell, John F., to Corning Glass Works. Macrofilament-reinforced composites. 4,341,835, Cl. 428-292.000.

MacDowell, John F., to Corning Glass Works. Microwave-compatible nepheline glass-ceramics. 4,341,872, Cl. 501-6.000.

Machida, Yozo: *See—*
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Mack, Robert A.: *See—*
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Mackay, Neilson A. M.; and Beal, John C. Measurement of soil moisture. 4,341,112, Cl. 73-73.000.

MacKnight, Allen K.; and Stancliffe, A. Colin, to Garrett Corporation, The. Dry excited singlet delta oxygen generator. 4,342,116, Cl. 372-89.000.

Mackrle, Svatopluk; and Novotny, Milos, to Agrotechnika, narodny podnik. Arrangement for separation of a suspension or emulsion from liquids by flotation. 4,341,630, Cl. 210-221.200.

Maddaloni, Ciro, to Autovox S.p.A. Device for detecting irregular operative situations, particularly for tape decks. 4,341,364, Cl. 242-191.000.

Magg, Johann: *See—*
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Magna Corporation: *See—*
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Magna-Graphics Corporation: *See—*
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Wittkopf, Eugene W., 4,341,525, Cl. 493-370.000.

Magnaflux Corporation: *See—*
Borrows, Kenneth P., 4,341,997, Cl. 324-215.000.

Maier, Henry B. Beam dancer fusion device. 4,341,730, Cl. 376-103.000.

Mailer, Werner H., to General Electric Company. Feed mechanism for continuous and cut form paper. 4,341,480, Cl. 400-625.000.

Mainot, Jean-Louis; and Picaud, Alain, to Reece Corporation, The. Machines for making welted openings in a piece of material or similar. 4,341,169, Cl. 112-121.120.

Maisch, Wolfgang: *See—*
Knapp, Heinrich; Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; Jaggle, Gunther; and Schelhas, Peter, 4,341,192, Cl. 123-452.000.

Majima, Junji: *See—*
Koshida, Daikichi; Sigisawa, Ko; Majima, Junji; and Hattori, Ryuichi, 4,341,803, Cl. 426-242.000.

Makino, Hiroshi. Assembly robot. 4,341,502, Cl. 414-744.00R.

Makino, Itsuo: *See—*
Hirai, Kentaro; Matsutani, Shigeru; Ishiba, Teruyuki; and Makino, Itsuo, 4,341,704, Cl. 260-243.300.

Maleri, E. Joseph: *See—*
Kohman, Wayne E.; and Maleri, E. Joseph, 4,341,582, Cl. 156-345.000.

Malikowski, Willi: *See—*
Bohm, Wolfgang; Wolmer, Roger; Szulczyk, Andreas; and Malikowski, Willi, 4,341,556, Cl. 75-173.00A.

Malone, John A.: *See—*
Stevens, Don L., Jr.; Brown, Steven L.; Malone, John A.; Knowles, Timothy A.; and Webb, Thomas G., 4,341,174, Cl. 114-45.000.

Malpass, Dennis B.; and Yeargin, G. Scott, to Texas Alkyls, Inc. Preparation of unsaturated alcohols. 4,341,910, Cl. 568-878.000.

Mangin, Andre: *See—*
Daire, Marc; Larrere, Yves; and Mangin, Andre, 4,341,533, Cl. 51-309.000.

Manita, Hideaki: *See—*
Sakakibara, Kyoichi; Manita, Hideaki; Gondo, Masaaki; and Yamashita, Haruo, 4,341,758, Cl. 424-12.000.

Manitowoc Company, Inc., The: *See—*
Schroeder, James C., 4,342,028, Cl. 340-407.000.

Mannes, Karl: *See—*
Vogel, Axel; Steffan, Guido; Mannes, Karl; and Trescher, Viktor, 4,341,720, Cl. 260-544.00Y.

Manoury, Philippe M. J., to Synthelabo. Quinazoline derivatives. 4,341,893, Cl. 544-284.000.

Mansueto, Leopoldo C., Jr.: *See—*
Kremer, Ross A.; and Mansueto, Leopoldo C., Jr., 4,341,899, Cl. 560-103.000.

Manville Service Corporation: *See—*
Byrd, Carlisle O., Jr.; and Hounsel, Mack A., 4,341,916, Cl. 373-128.000.

Marathon Oil Company: *See—*
Merrill, LaVaun S., Jr., 4,341,620, Cl. 208-11.00R.

Marcantonio, Arnold F.; Kress, Paul J.; and Powers, John W., to Ball Corporation. Compositions for treating aluminum surfaces for tarnish resistance. 4,341,878, Cl. 524-3.000.

Marchi, Egidio; and Montecchi, Lauretta, to Alfa Farmaceutici S.p.A. Imidazo-rifamycin derivatives with antibacterial utility. 4,341,785, Cl. 424-256.000.

Marco, Francis W.; and Stokes, Clarence O., Jr., to Milliken Research Corporation. Cellulose derivative/polyether polyamine/polyepoxide reaction product as antistatic soil release finish for polyester. 4,341,669, Cl. 523-205.000.

Marconi Instruments Limited: *See—*
Elliott, Robert, 4,342,007, Cl. 334-4.000.

Marcus, Konrad H.; and Hochreiter, Robert D., to Prince Corporation. Digital compass. 4,341,023, Cl. 33-363.00K.

Marcyan, Stanley T. Headboard coupling for knock-down bed. 4,340,984, Cl. 5-296.000.

Mareydt, Ray G.: *See—*
Kowalski, Daniel J.; and Mareydt, Ray G., 4,341,332, Cl. 224-326.000.

Marin, Guy F. M.; and Riffiod, Michel M. R., to U.S. Philips Corporation. Indicator having belts, intended in particular for a radio altimeter. 4,342,087, Cl. 364-433.000.

Marker, Hannes; Knabel, Walter; and Eichweber, Gerhard, to Marker, Hannes. Method and apparatus for testing the resetting capacity of safety ski bindings which are for example mounted on skis. 4,341,121, Cl. 73-862.020.

Marsh, Harold P., to Eastman Kodak Company. Stabilized polypropylene composition. 4,341,690, Cl. 524-451.000.

Marsh, Paul S.: *See—*
Escallon, Eduardo C.; and Marsh, Paul S., 4,341,103, Cl. 72-70.000.

Marshall, Joseph S. Method for freeing stuck drill pipe. 4,341,272, Cl. 175-65.000.

Martenson, Irvin W., to American Organics Corporation. Liquid colorant composition. 4,341,565, Cl. 106-307.000.

Marth, Ronald M.: *See—*
Sim, William J.; and Marth, Ronald M., 4,341,051, Cl. 52-702.000.

Martin, Anthony G. Building structural element. 4,341,917, Cl. 136-206.000.

Martin, Jeffrey E.; Vozella, Albert F.; Watts, Golden F.; and Luckman, Edwin R., to Ashland Oil, Inc. Aqueous composition containing aldehyde condensate and use thereof. 4,341,668, Cl. 524-297.000.

Martin, Roland: *See—*
Briffod, Jean-Paul; Martin, Roland; Pfau, Jean; Bommeli, Bernard; and Schnellmann, Danielle, 4,341,939, Cl. 219-69.00W.

Maruko, Yutaka; Sako, Susumu; and Kobayashi, Tamotu, to Kabushiki Kaisha Yaskawa Denki Seisakusho. Armature in electrical rotary machine. 4,341,973, Cl. 310-268.000.

Marumoto, Ryuji; Shima, Shunsuke; and Tanabe, Masao, to Takeda Chemical Industries, Ltd. 2,6-Diaminonebularines, their production and use. 4,341,769, Cl. 424-180.000.

Marvin Glass & Associates: *See—*
Hicks, Alan A.; and Breslow, Jeffrey D., 4,341,390, Cl. 273-265.000.
Jaworski, Eugene; and Disko, Harry, 4,341,035, Cl. 46-135.00R.

Masaki, Takaki: *See—*
Okuo, Takayasu; Masaki, Takaki; and Kobayashi, Keisuke, 4,341,965, Cl. 310-11.000.

Maschinenfabrik Koppern GmbH & Co. KG.: *See—*
Hartmut, Rieschel, 4,341,349, Cl. 239-222.170.

Mascia, Carmen T.; and Hasegawa, Gary K., to Continental Group, Inc., The. Aerosol container. 4,341,330, Cl. 222-401.000.

Massa, Louis B. Combined tenor and soprano saxophone. 4,341,146, Cl. 84-381.000.

Massachusetts Institute of Technology: *See—*
Langer, Robert S., Jr.; Linhardt, Robert; Cooney, Charles L.; and Galliher, Parrish M., 4,341,869, Cl. 435-232.000.

Masson, Jean-Paul: *See—*
Thuries, Edmond; and Masson, Jean-Paul, 4,342,067, Cl. 361-333.000.

Mast, Fred, to Gretag Aktiengesellschaft. Measuring head in or for a densitometer. 4,341,473, Cl. 356-446.000.

Masu, Masanobu: *See—*
Sugio, Akitoshi; Masu, Masanobu; Okabe, Masao; Matunaga, Masatugu; and Ishiyama, Kozo, 4,341,879, Cl. 524-91.000.

Masugi, Takashi: *See—*
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,341,775, Cl. 424-246.000.

Material Concepts, Inc.: *See—*
Sexton, Richard W.; and Goddard, David M., 4,341,823, Cl. 427-404.000.

Materne, Carsten: *See—*
Betzing, Hans; Biedermann, Jurgen; Materne, Carsten; and Neuser, Volker, 4,341,790, Cl. 424-274.000.

Mathews, Howard: *See—*
Steer, Peter L.; and Mathews, Howard, 4,341,207, Cl. 128-155.000.

Mathieu, Julien C., to Dayco Corporation. Railway center plate liner. 4,341,162, Cl. 105-199.00C.

Maton, Maurice E. G., to Beaumont (U.K.) Limited. Tank cleaning apparatus. 4,341,232, Cl. 134-107.000.

Matsubara, Hiroyoshi; Takeshige, Kenji; Osuka, Tatsumi; Nagamine, Takashi; Hirano, Osamu; Tanaka, Jinkichi; Watanabe, Itaru; and Suzuki, Motoaki, to Nippon Kokan Kabushiki Kaisha. Method and apparatus for seam-welding steel pipes. 4,341,938, Cl. 219-61.000.

Matsuda, Shimpei: *See—*
Mori, Toshikatsu; Kumagai, Teruo; Matsuda, Shimpei; and Nakajima, Fumito, 4,341,753, Cl. 423-569.000.

Matsui, Takayuki: *See—*
Tohara, Kazuo; Yamashita, Seizi; Matsui, Takayuki; Motegi, Shoji; and Takahashi, Noriyoshi, 4,341,971, Cl. 310-195.000.

Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, to Dainippon Pharmaceutical Co., Ltd.; and Laboratoire Roger Bellon. Naphthyridine derivatives. 4,341,784, Cl. 424-256.000.

Matsunaga, Isao: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,341,776, Cl. 424-246.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Inaba, Ritsuo; and Wasa, Kiyotaka, 4,342,012, Cl. 333-155.000.
Suzuki, Kazufumi; Kumagai, Shumi; Ochiai, Yuetsu; and Mizoguchi, Akira, 4,342,051, Cl. 358-283.000.

Matsushita Seiko Co., Ltd.: *See*—
Sakamoto, Kunji, 4,341,151, Cl. 98-94.00R.

Matsushita, Susumu; Tada, Yoshimitsu; and Ikushige, Tetsuo, to Toyo Soda Manufacturing Co., Ltd. Analytical method of hydrocarbon compounds. 4,341,634, Cl. 210-656.000.

Matsutani, Shigeru: *See*—
Hirai, Kentaro; Matsutani, Shigeru; Ishiba, Teruyuki; and Makino, Itsuo, 4,341,704, Cl. 260-243.300.

Matsuura, Kazuho: *See*—
Konishi, Kazuo; and Matsuura, Kazuho, 4,341,782, Cl. 424-251.000.

Matsuyama, Shigeru; Koyama, Masaharu; and Sato, Yukihiro, to Hitachi, Ltd. Liquid crystal display element and production thereof. 4,341,445, Cl. 350-344.000.

Matsuzawa, Hideo: *See*—
Ishii, Hiromichi; Matsuzawa, Hideo; Kobayashi, Masao; and Otani, Masato, 4,341,900, Cl. 562-532.000.

Mattel, Inc.: *See*—
Reichert, David A., 4,341,383, Cl. 273-85.00G.

Mattes, Susan L.; and Farid, Samir Y., to Eastman Kodak Company. Polycyanoanthracenes and use as sensitizers for electrophotographic compositions. 4,341,852, Cl. 430-83.000.

Matthews, Gerald L.: *See*—
Baker, Philip G.; and Matthews, Gerald L., 4,341,454, Cl. 354-304.000.

Matthewson, Michael D., to Burroughs Wellcome Co. Synergistic compositions. 4,341,760, Cl. 424-45.000.

Matunaga, Masatugu: *See*—
Sugio, Akitoshi; Masu, Masanobu; Okabe, Masao; Matunaga, Masatugu; and Ishiyama, Kozo, 4,341,879, Cl. 524-91.000.

Matzinger, Peter, to Sandoz Ltd. Monoazo compounds having a substituted 1,2,3-triazolyl-5 diazo component radical and an unsubstituted or substituted 1,4-phenylene coupling component radical. 4,341,700, Cl. 260-157.000.

Maurer, Herman J.; and Pedersen, Carl O., to J. I. Case Company. Hydraulic control valve circuit for a swing mechanism. 4,341,501, Cl. 414-694.000.

Max-Planck-Gesellschaft zur Foerderung der Wissenschaften E.V.: *See*—
Ruhenstroth-Bauer, Gerhard; Goldberg, Michel; Silz, Siegfried; and Strecker, Wolfgang, 4,341,765, Cl. 424-101.000.

Max-Planck-Gesellschaft zur Forderung d. Wissenschaften e. V.: *See*—
Johnson, Mark, 4,341,442, Cl. 350-96.300.

Mayer, Robert E., to General Electric Company. Coaxial dual hollow piston regenerative liquid propellant gun. 4,341,147, Cl. 89-7.000.

Mayr, Bertold; and Seidl, Jiri, to Bayerische Motoren Werke Aktiengesellschaft. Air intake system for a multi-cylinder internal combustion engine. 4,341,186, Cl. 123-52.00M.

Mazzanti, Vincent E. Sound suppression system. 4,341,283, Cl. 181-223.000.

McArthur, Dennis P.: *See*—
Baron, Kenneth; and McArthur, Dennis P., 4,341,661, Cl. 252-455.00Z.

MCC Corporation: *See*—
Yamazaki, Shigeo; and Nakamura, Masahiko, 4,341,134, Cl. 81-9.50A.

McConnell, Alan S. Universal automotive vent. 4,341,150, Cl. 98-2.120.

McCorquodale Machine Systems Limited: *See*—
Walker, Roger; and Holdsworth, Alan, 4,341,299, Cl 198-434.000.

McCoy, Stephen A., to Procter & Gamble Company, The. Peanut butter stabilizer. 4,341,814, Cl. 426-607.000.

McDevitt, Bernard J., to Sperry Corporation. Variable pitch character generator for dot matrix printer. 4,342,096, Cl. 364-900.000.

McDonie, Arthur F.: *See*—
Tomasetti, Charles M.; Harsh, Maurice D.; and McDonie, Arthur F., 4,341,427, Cl. 316-1.000.

McDonnell Douglas Corporation: *See*—
Cross, James R., 4,341,044, Cl. 51-5.00D.

McDougall, Patrick P. Article holder. 4,341,331, Cl. 224-219.000.

McFarland, Archie R.: *See*—
dos Santos, Claudio; and McFarland, Archie R., 4,340,994, Cl. 17-45.000.

McIntyre, James A.; Phillips, Robert F.; and Lefevre, Joseph D., to Dow Chemical Co., The. Method of operating electrolytic cells having massive dual porosity gas electrodes. 4,341,606, Cl. 204-98.000.

McKewan, Arthur J.: *See*—
Downey, Gerald P.; and McKewan, Arthur J., 4,341,497, Cl. 411-311.000.

McMaster, Ronald A.: *See*—
Nitschke, Norman C.; and McMaster, Ronald A., 4,341,546, Cl. 65-163.000.

McMullan, James P.; Lindsay, Rudy E.; and Land, Jerry E., to McMullan, James P. Crib flotation bed. 4,340,983, Cl. 5-93.00R.

McVeigh, Peter J.: *See*—
Rudish, Ronald M.; and McVeigh, Peter J., 4,341,999, Cl. 328-155.000.

Mead Corporation, The: *See*—
Oliff, James R., 4,341,309, Cl. 206-429.000.

Medtronic, Inc.: *See*—
Peters, Peter, 4,341,226, Cl. 128-784.000.
Testerman, Roy L., 4,341,221, Cl. 128-642.000.

Medwid, Albert. Serous fluid drain kit. 4,341,212, Cl. 128-276.000.

Mei, Viung C.; Lavan, Zalman; and Chaturvedi, Sushil K. Highway vehicle exhaust gas refrigeration system. 4,341,088, Cl. 62-239.000.

Meinass, Helmut; and Volz, Bernhard, to Linde Aktiengesellschaft. Method and apparatus for emptying vessels. 4,341,234, Cl. 137-110.000.

Melcher, Franz-Josef: *See*—
Stadler, Eberhard; and Melcher, Franz-Josef, 4,341,275, Cl. 177-212.000.

Mellish, Stuart F.: *See*—
Couper, Aitken M.; and Mellish, Stuart F., 4,341,614, Cl. 204-296.000.

Melocik, Kurt B., to Caterpillar Tractor Co. Pressure reducing valve with floating stem for make-up vent. 4,341,243, Cl. 137-625.680.

Melpolder, John B.: *See*—
Deichert, William G.; Friends, Gary D.; Melpolder, John B.; and Park, Joon S., 4,341,889, Cl. 528-26.000.

Melvin, Lawrence S., Jr.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,341,906, Cl. 568-328.000.

Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; Hoefke, Wolfgang; Gaida, Wolfram; Streller, Ilse; and Fugner, Armin, to C. H. Boehringer Sohn. 3,1 Benzoxazin-2-ones and use thereof. 4,341,778, Cl. 424-248.500.

Merck & Co., Inc.: *See*—
Belanger, Patrice C.; and Young, Robert N., 4,341,904, Cl. 564-427.000.
Christensen, Burton G.; and Shih, David H., 4,341,706, Cl. 260-245.20T.
Christensen, Burton G.; and Shih, David H., 4,341,791, Cl. 424-274.000.
Shih, David H., 4,341,705, Cl. 260-245.20T.

Merrill, LaVaun S., Jr., to Marathon Oil Company. Method and apparatus for processing oil shale in a rotary hearth. 4,341,620, Cl. 208-11.00R.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See*—
Dettfurth, Karl; and Dettfurth, Bernd, 4,341,053, Cl. 52-787.000.

Metzler, Louis A. Veterinary apparatus. 4,341,183, Cl. 119-158.000.

Meulenberg, Abraham J.: *See*—
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Meyer, Danny S., to ACF Industries, Incorporated. Expanding gate valve assembly. 4,341,369, Cl. 251-168.000.

Meyer, Frank; and Romey, Ingo, to Bergwerksverband GmbH. Adhesive securing of anchors in borehole. 4,341,301, Cl. 206-219.000.

Meyer, Hans H.: *See*—
Warncke, Heinz; Kahl, Melchior; Meyer, Hans H.; and Schurmeyer, Paul, 4,341,108, Cl. 73-23.000.

Meyer, Wilhelm. Wheelchair. 4,341,278, Cl. 180-79.100.

Meywald, Klaus: *See*—
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Michaud, Raymond J.: *See*—
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Microdot Inc.: *See*—
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Mikhail, Ezzat A.: *See*—
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Milberger, Ernest C.: *See*—
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Mile High Equipment Company: *See*—
Van Steenburgh, Leon R., Jr., 4,341,087, Cl. 62-233.000.

Miller, Ann: *See*—
Miller, Ray; Miller, Ann; Haumberger, Hans, Sr.; and Haumberger, Hans, Jr., 4,341,395, Cl. 280-432.000.

Miller Brewing Company: *See*—
Chaudhary, Vinod K., 4,341,805, Cl. 426-481.000.

Miller, Peter T.: *See*—
Cruz-Uribe, Antonio S.; Lewis, Peter J.; and Miller, Peter T., 4,342,042, Cl. 346-140.00R.

Miller, Ray; Miller, Ann; Haumberger, Hans, Sr.; and Haumberger, Hans, Jr., to Miller, Ray; and Miller, Ann. Anti-jackknifing control device. 4,341,395, Cl. 280-432.000.

Milligan, Barton; and Pinschmidt, Robert K., Jr., to Air Products and Chemicals, Inc. Synthesis of isocyanates from nitroalkanes. 4,341,898, Cl. 560-24.000.

Milligan, Michael R. Spotting deck for a trampoline. 4,341,379, Cl. 272-65.000.

Milliken Research Corporation: *See*—
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Southerlin, William F.; and Eschenbach, Paul W., 4,341,063, Cl. 57-6.000.

Mills, Allen P., Jr., to Bell Telephone Laboratories, Incorporated. Apparatus for efficient generation of low-energy positrons. 4,341,731, Cl. 376-156.000.
Milne, Paul A. Bridge structure for stringed instruments. 4,341,144, Cl. 84-307.000.
Minami, Setsuo: *See—*
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Mine Safety Appliances Company: *See—*
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Minegishi, Akira: *See—*
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Minerd, Russell C. Remote-controlled key-depressing device. 4,341,143, Cl. 84-107.000.
Minigrip, Inc.: *See—*
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Ministry of International Trade & Industry: *See—*
Okuo, Takayasu; Masaki, Takaki; and Kobayashi, Keisuke, 4,341,965, Cl. 310-11.000.
Minnesota Mining and Manufacturing Company: *See—*
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Kemski, Michael B., 4,341,825, Cl. 428-35.000.
Ruffing, Sharon L.; Burg, Wallace E.; and Mikhail, Ezzat A., 4,341,901, Cl. 564-99.000.
Seabold, Thomas W.; Patterson, Richard A.; and de Neui, Richard P., 4,341,585, Cl. 156-443.000.
Minolta Camera Kabushiki Kaisha: *See—*
Shigoku, Masaharu, 4,341,450, Cl. 354-273.000.
Minoura, Kazuo: *See—*
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Minter, Buryl. Container method and apparatus. 4,341,091, Cl. 62-372.000.
Minter, Mearl J., to Rolscreen Company. Method and assembly for cladding a window frame. 4,341,048, Cl. 52-211.000.
Miracle Recreation Equipment Company: *See—*
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Mistral Incorporated: *See—*
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Mitsubishi Chemical Industries, Limited: *See—*
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Mitsubishi Denki Kabushiki Kaisha: *See—*
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Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, 4,341,947, Cl. 219-383.000.
Nagatomo, Masao; Abe, Haruhiko; and Mizuguchi, Kazuo, 4,341,616, Cl. 204-298.000.
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Mitsubishi Gas Chemical Company, Inc.: *See—*
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Mitsubishi Kinzoku Kabushiki Kaisha: *See—*
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Mitsubishi Petrochemical Co. Ltd.: *See—*
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Mitsubishi Rayon Company, Limited: *See—*
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Murakami, Fumiki; Ikeda, Minoru; Tokutomi, Takashi; and Nakano, Toshiharu, 4,341,536, Cl. 55-93.000.
Mitsuhashi, Sadayuki: *See—*
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Miura, Hideichi: *See—*
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Miyake, Haruhisa; Sugaya, Yoshio; and Asawa, Tatsuro, to Asahi Glass Company, Ltd. Process for preparing organic dispersion of acid type fluorinated polymer. 4,341,685, Cl. 524-104.000.
Miyaki, Takeo: *See—*
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Miyakoshi, Hideo: *See—*
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Miyamoto, Hiroaki: *See—*
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Miyamoto, Yoshihiko: *See—*
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Miyano, Tadashi: *See—*
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Miyasaka, Kiyoshi: *See—*
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Miyazaki, Takeshi; and Ono, Hiromi, to Kawasaki Jukogyo Kaikan Kaisha. Small watercraft. 4,341,177, Cl. 114-125.000.
Miyoshi, Masayuki, to Hitachi, Ltd. Method of digital logic simulation. 4,342,093, Cl. 364-578.000.
Mizoguchi, Akira: *See—*
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Mizuguchi, Kazuo: *See—*
Nagatomo, Masao; Abe, Haruhiko; and Mizuguchi, Kazuo, 4,341,616, Cl. 204-298.000.
Mizushima, Yoshihiko; Takeda, Akitsu; Komiya, Kazumi; Sakaue, Masahiro; Ogino, Toshio; Itoh, Hideo; and Oka, Masayoshi, to Nippon Telegraph & Telephone Public Corp.; and Origin Electric Co., Ltd. Photo-electric converting apparatus. 4,341,954, Cl. 250-211.00J.
Mobay Chemical Corporation: *See—*
Kuehni, Rolf G.; and Cox, Thomas C., 4,341,526, Cl. 8-610.000.
Thiem, Karl W.; and Vanderpool, Daniel P., 4,341,902, Cl. 564-218.000.
Mobil Oil Corporation: *See—*
Bell, Weldon K.; Chang, Clarence D.; and Shinnar, Reuel, 4,341,069, Cl. 60-39.020.
Kerby, Jacques C., 4,341,323, Cl. 220-224.000.
Plank, Charles J.; Rosinski, Edward J.; and Rubin, Mae K., 4,341,748, Cl. 423-328.000.
Tabak, Samuel A.; and Morrison, Roger A., 4,341,622, Cl. 208-66.000.
Tobias, Michael A., 4,341,682, Cl. 523-409.000.
Mock, Donald E., to Cetec Corporation. Storm window. 4,341,255, Cl. 160-369.000.
Modular Controls Corporation: *See—*
Kosarzecki, Constantine, 4,341,148, Cl. 91-356.000.
Molins Limited: *See—*
Dingli, Paul, 4,341,298, Cl. 198-419.000.
Monbaliu, Marcel J.: *See—*
Vandewalle, Jan J.; Monbaliu, Marcel J.; and Van Poucke, Raphael K., 4,341,864, Cl. 430-505.000.
Monnerat, Georgia A.; Ham, George E.; Hairston, Thomas J.; and Hatch, Melvin J., to Dow Chemical Co., The. Catalyst for reacting phenolic hydroxyl groups with epoxy groups. 4,341,658, Cl. 252-428.000.
Monnet, Bernard: *See—*
Laurent, Jean; Monnet, Bernard; and Pertuis, Philippe, 4,341,511, Cl. 425-150.000.
Monsanto Company: *See—*
Lee, Yoon C.; and Trementozzi, Quirino A., 4,341,695, Cl. 524-342.000.
Snelgrove, James A., 4,341,683, Cl. 524-503.000.
Monser, George J., to Raytheon Company. Radio frequency antenna with polarization changer and filter. 4,342,034, Cl. 343-756.000.
Montecchi, Lauretta: *See—*
Marchi, Egidio; and Montecchi, Lauretta, 4,341,785, Cl. 424-256.000.
Montgomery, William G., Jr.; and Pynor, T. Eric, to R & M Associates, Inc. Method for pneumatically handling agglomerative materials. 4,341,492, Cl. 406-130.000.
Montren, William: *See—*
Goldstein, Harold; and Montren, William, 4,341,117, Cl. 374-170.000.
Moody, Christopher J.: *See—*
Hassall, Cedric H.; and Moody, Christopher J., 4,341,781, Cl. 424-250.000.
Mooney, John B.; and Brodie, Ivor, to Savin Corporation. Electrophotographic photoconductor comprising CdS and ZnS. 4,341,851, Cl. 430-56.000.
Moore, James W.; and Peterson, Rudolph A., Jr., to Deere & Company. Silencer means for internal combustion engines. 4,341,284, Cl. 181-272.000.
Morgan, Leonard M. Ski rest for a ski pole. 4,341,400, Cl. 280-819.000.
Morgan, Thomas R.: *See—*
Anderson, Iain; Benjamin, Ralph; and Morgan, Thomas R., 4,342,035, Cl. 343-792.500.
Mori, Toshikatsu; Kumagai, Teruo; Matsuda, Shimpei; and Nakajima, Fumito, to Hitachi, Ltd.; and Babcock-Hitachi Kabushiki Kaisha. Method and apparatus for converting sulfur dioxide in gas to sulfur. 4,341,753, Cl. 423-569.000.
Morihara, Ko: *See—*
Hayashi, Kohtaro; Morihara, Ko; and Nakamura, Kohji, 4,341,729, Cl. 264-566.000.
Morimine, Ryoichi: *See—*
Fujinami, Susumu; Miyamoto, Hiroaki; Morimine, Ryoichi; Fukuzawa, Toshiki; Ueda, Toshihiko; Umakoshi, Shoji; and Tokunaga, Kiyohiko, 4,341,628, Cl. 210-101.000.
Morimoto, Takeshi: *See—*
Oda, Yoshio; Morimoto, Takeshi; and Suzuki, Kohji, 4,341,612, Cl. 204-253.000.
Morimura, Hiroaki; and Abe, Masanori, to Nissan Motor Co., Ltd. Stabilizing device for a suspension of an automotive vehicle. 4,341,397, Cl. 280-688.000.
Morioka, Akitoshi: *See—*
Iwata, Hiroshi; and Morioka, Akitoshi, 4,341,449, Cl. 354-126.000.
Morita, Takayuki: *See—*
Kondo, Kanetaka; Morita, Takayuki; and Ushino, Masashi, 4,341,067, Cl. 57-275.000.

Morita, Toshikatsu; and Minegishi, Akira, to Honda Giken Kogyo Kabushiki Kaisha. Workpiece hanger carriage. 4,341,161, Cl. 105-149.000.

Morita, Yutaka: *See—*
Kitamura, Masatsugu; Onoye, Hideo; Ohno, Fumiaki; Ono, Tsuyoshi; Kishima, Yukihiro; and Morita, Yutaka, 4,342,110, Cl. 369-252.000.

Moriya, Yoshio: *See—*
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Morizono, Akira: *See—*
Ishii, Shouichi; Shimanuki, Masanobu; and Morizono, Akira, 4,342,056, Cl. 360-72.100.

Moro, Kanji: *See—*
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,341,776, Cl. 424-246.000.

Morris, George C.: *See—*
Ellis, John D.; Crichton, George; Godwin, Millard C.; and Morris, George C., 4,341,739, Cl. 422-207.000.

Morrison, Edward D.; Krall, Harry J.; Carr, David L.; and Lu, Chen-i, to Eastman Kodak Company. Photographic element provided with a magnetic recording stripe and method and composition for manufacture thereof. 4,341,855, Cl. 430-140.000.

Morrison, Roger A.: *See—*
Tabak, Samuel A.; and Morrison, Roger A., 4,341,622, Cl. 208-66.000.

Moser, Theo: *See—*
Kuemmerer, Helmut; Moser, Theo; and Genstorfer, Adolf, 4,341,329, Cl. 222-275.000.

Moss, Robert R. Game call. 4,341,037, Cl. 46-178.000.

Mostek Corporation: *See—*
Link, Joseph, 4,342,069, Cl. 361-401.000.

Motegi, Shoji: *See—*
Tohara, Kazuo; Yamashita, Seizi; Matsui, Takayuki; Motegi, Shoji; and Takahashi, Noriyoshi, 4,341,971, Cl. 310-195.000.

Motorenfabrik Hatz GmbH & Co. KG: *See—*
Absenger, Erich, 4,341,187, Cl. 123-198.00E.

Motorola, Inc.: *See—*
Arvanitis, Aristotelis, 4,342,014, Cl. 333-191.000.
Davis, William F., 4,341,990, Cl. 323-303.000.
Edminster, Robert E., 4,341,159, Cl. 102-228.000.
Tredennick, Harry L.; and Gunter, Thomas G., 4,342,078, Cl. 364-200.000.

Mouton, William J., Jr. Hydraulic well derrick with cable lifts. 4,341,373, Cl. 254-386.000.

Mowry, William H., Jr.; and Gerew, Kathleen M., to Burroughs Corporation. Security document using a variable dot screen. 4,341,404, Cl. 283-8.00B.

MPH Ltd.: *See—*
Hsi, Peter H. Y., 4,341,049, Cl. 52-421.000.

Mucenieks, Paul R., to FMC Corporation. Method of preparing reinforced asbestos diaphragms for chlorine-caustic cells. 4,341,596, Cl. 162-105.000.

Mulder, Hendrik; and Houtkamp, Johannes J., to N.V. Optische Industrie "De Oude Delft". Image intensifier of the proximity-focus type. 4,341,955, Cl. 250-213.0VT.

Muller, Hanns P.: *See—*
Schneider, Gottfried; Wagner, Kuno; and Muller, Hanns P., 4,341,909, Cl. 568-863.000.

Muller, Hans-Ekkehard: *See—*
Zopff, Hans; and Muller, Hans-Ekkehard, 4,341,745, Cl. 423-210.000.

Muller, Michael, to Keyboard Company, The. Actuator for keyboard switches. 4,341,934, Cl. 200-159.00A.

Muller, Ortwin: *See—*
Lang, Walter; Muller, Ortwin; and Neidlinger, Alfons, 4,341,435, Cl. 350-35.000.

Mulqueen, Herbert J., Jr.: *See—*
Hand, Calvin H., Jr.; Hand, David J.; and Careatti, John A., 4,341,199, Cl. 126-163.00A.

Murakami, Fumiki; Ikeda, Minoru; Tokutomi, Takashi; and Nakano, Toshiharu, to Mitsubishi Rayon Company, Ltd. Method for continuously removing fine dust particles from gases. 4,341,536, Cl. 55-93.000.

Murakoshi, Makoto; and Yoshizawa, Tamotu, to Fuji Photo Film Co., Ltd. Device for moving a slidable stage on a two-dimensional plane. 4,341,128, Cl. 74-479.000.

Muramatsu, Kenzi: *See—*
Komatsu, Fumito; and Muramatsu, Kenzi, 4,341,142, Cl. 84-95.00R.

Murayama, Masayosi: *See—*
Kageyama, Yoichi; Hatano, Masakatsu; Koyama, Toru; Kaneko, Takao; Murayama, Masayosi; and Oshima, Kazunori, 4,341,659, Cl. 252-435.000.

Murayama, Naohiro: *See—*
Katsuto, Takayuki; Endo, Shunzo; Doi, Hideaki; and Murayama, Naohiro, 4,341,837, Cl. 428-336.000.

Muschaweck, Roman: *See—*
Sturm, Karl; and Muschaweck, Roman, 4,341,773, Cl. 424-229.000.

Myers, George D., to Ashland Oil, Inc. Carbo-metallic oil conversion. 4,341,624, Cl. 208-120.000.

Myo-Tronics, Inc.: *See—*
Adib, Freydoon, 4,342,086, Cl. 364-415.000.

N-Viro Energy Systems, Ltd.: *See—*
Ahlbeck, Richard A., 4,341,562, Cl. 106-97.000.

Nabisco Brands, Inc.: *See—*
Ward, John, 4,341,812, Cl. 426-603.000.
Ward, John, 4,341,813, Cl. 426-603.000.

Nagamine, Takashi: *See—*
Matsubara, Hiroyoshi; Takeshige, Kenji; Osuka, Tatsumi; Nagamine, Takashi; Hirano, Osamu; Tanaka, Jinkichi; Watanabe, Itaru; and Suzuki, Motoaki, 4,341,938, Cl. 219-61.000.

Nagaraj, D. R.: *See—*
Dauplaise, David L.; and Nagaraj, D. R., 4,341,626, Cl. 209-166.000.

Nagatomo, Masao; Abe, Haruhiko; and Mizuguchi, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Dry etching device. 4,341,616, Cl. 204-298.000.

Nagy, Laszlo, to General Motors Corporation. Split axle drive mechanism. 4,341,281, Cl. 180-247.000.

Naiff, Kenneth L., to General Instrument Corporation. I^2L Static shift register. 4,341,960, Cl. 307-221.00R.

Nail, James A., to Chicago Bridge & Iron Company. Freeze concentration apparatus and method. 4,341,085, Cl. 62-124.000.

Nakahata, Kimio; Tanigawa, Koichi; and Adachi, Hiroyuki, to Canon Kabushiki Kaisha. Electrophotographic apparatus including an electrostatic separation device. 4,341,457, Cl. 355-3.0CH.

Nakajima, Fumito: *See—*
Mori, Toshikatsu; Kumagai, Teruo; Matsuda, Shimpei; and Nakajima, Fumito, 4,341,753, Cl. 423-569.000.

Nakamichi Corporation: *See—*
Terui, Nobuo; and Kobayashi, Kozo, 4,342,054, Cl. 360-40.000.

Nakamura, Akito, to Toray Silicone Company, Ltd. Rubber compositions containing ethylene-propylene-diene terpolymers or ethylene-propylene copolymers and silicones. 4,341,675, Cl. 524-266.000.

Nakamura, Kohji: *See—*
Hayashi, Kohtaro; Morihara, Ko; and Nakamura, Kohji, 4,341,729, Cl. 264-566.000.

Nakamura, Masahiko: *See—*
Yamazaki, Shigeo; and Nakamura, Masahiko, 4,341,134, Cl. 81-9.50A.

Nakamura, Osamu; Akamatsu, Takeshi; and Goto, Junjiro, to Fujitsu Limited. Manufacturing method of glass for optical transmission body. 4,341,542, Cl. 65-17.000.

Nakanishi, Toru; and Machida, Yozo, to Kyowa Hakko Kogyo Co., Ltd. Method and test composition for the determination of the substrate for xanthine oxidase. 4,341,868, Cl. 435-191.000.

Nakano, Toshiharu: *See—*
Murakami, Fumiki; Ikeda, Minoru; Tokutomi, Takashi; and Nakano, Toshiharu, 4,341,536, Cl. 55-93.000.

Nakao, Sho: *See—*
Toyama, Tadao; Nakao, Sho; Shiba, Keisuke; Sera, Hidefumi; and Ogawa, Masasi, 4,341,856, Cl. 430-156.000.

Nartron Corporation: *See—*
Bull, Dale L.; and Rautiola, Norman A., 4,342,074, Cl. 362-365.000.

National Research Development Corporation: *See—*
Boa, Walter; and Grundon, Peter M., 4,341,333, Cl. 225-96.000.
Shanks, Ian A., 4,342,030, Cl. 340-753.000.

National Research Institute for Metals: *See—*
Tachikawa, Kyoji; Togano, Kazumasa; and Takeuchi, Takao, 4,341,572, Cl. 148-11.50F.

Navias, Louis: *See—*
Park, Dong-Sil; Breiter, Manfred W.; Dunn, Bruce S.; and Navias, Louis, 4,341,849, Cl. 429-104.000.

Naylor, Joseph L.: *See—*
Eikerman, H. H.; and Naylor, Joseph L., 4,341,516, Cl. 432-95.000.

Nazario, Francisco N.: *See—*
Stetka, Steven S.; and Nazario, Francisco N., 4,341,618, Cl. 208-8.0LE.

NCR Corporation: *See—*
Kyles, Ronald H.; and Woodard, Richard B., 4,341,950, Cl. 235-92.0EA.

Neathery, David O.; and Riggs, Edward J., to King Instrument Corporation. Anticipating servo controller for controlling magnetic tape movement in a tape cassette loader. 4,341,362, Cl. 242-183.000.

Nebashi, Toshiyuki: *See—*
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,341,776, Cl. 424-246.000.

Negishi, Fumio: *See—*
Suzuki, Sadao; Kinoshita, Harumi; Takada, Takuzo; and Negishi, Fumio, 4,341,317, Cl. 215-31.000.

Negishi, Takao; and Tomiita, Kazuo, to Toray Industries, Incorporated. Method for producing an improved bundle of fibrous elements. 4,341,068, Cl. 57-288.000.

Neidlinger, Alfons: *See—*
Lang, Walter; Muller, Ortwin; and Neidlinger, Alfons, 4,341,435, Cl. 350-35.000.

Nekado, Mitsunobu: *See—*
Ozeki, Kenichi; Wada, Toyoji; Ito, Kunio; Tomimori, Tetsuo; Takagi, Isao; and Nekado, Mitsunobu, 4,341,687, Cl. 524-500.000.

Nelson, Bruce G.: *See—*
Weaver, Gerald Q.; and Nelson, Bruce G., 4,341,725, Cl. 264-28.000.

Nelson, Gary L.; and Harvey, William A., to Sperry Corporation. Single surface LPE crystal growth. 4,341,590, Cl. 156-624.000.

Nelson, Hoyt H.: *See—*
Jackson, Bernie F.; and Nelson, Hoyt H., 4,341,119, Cl. 73-462.000.

Nelson, James F.; and Nelson, Robert W. Work length gauge attachment for chain saws. 4,341,018, Cl. 30-383.000.

Nelson, Robert W.: *See—*
Nelson, James F.; and Nelson, Robert W., 4,341,018, Cl. 30-383.000.
Nemecek, Borivoj. Connector. 4,341,487, Cl. 403-297.000.
Nenner, Thomas; and Foraison, Dominique, to Rhone-Poulenc Industries. Extraction of uranium using electrolytic oxidization and reduction in bath compartments of a single cell. 4,341,602, Cl. 204-1.500.
Nerstrom, James S., to Outboard Marine Corporation. Two-cycle internal combustion engine including means for varying cylinder port timing. 4,341,188, Cl. 123-324.000.
Nestor, John J.; Jones, Gordon H.; and Vickery, Brian H., to Syntex Inc. Nonapeptide and decapeptide analogs of LHRH, useful as LHRH antagonists. 4,341,767, Cl. 424-177.000.
Neumann, Albert. Earth retaining system. 4,341,491, Cl. 405-258.000.
Neuser, Volker: *See—*
Betzing, Hans; Biedermann, Jurgen; Materne, Carsten; and Neuser, Volker, 4,341,790, Cl. 424-274.000.
Newton, William A.: *See—*
Brunsting, Albert; Hogg, Walter R.; and Newton, William A., 4,341,993, Cl. 324-71.0CP.
NGK Spark Plug Co., Ltd.: *See—*
Nishio, Kanemitsu; and Suzuki, Takashi, 4,341,195, Cl. 123-598.000.
NHK Spring Co., Ltd.: *See—*
Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,341,841, Cl. 428-414.000.
Nichol, Thomas, to Lucas Industries Limited. Warning lamp arrangements for vehicle battery charging systems. 4,342,022, Cl. 340-52.00R.
Nielsen, Arne, to SIG Societe Industrielle Suisse. Mobile machine for the treatment of railway tracks. 4,341,160, Cl. 104-7.00B.
Niemczyk, Stephen E.; and Hubbard, Richard G., Jr., to United Technologies Corporation. Color calibration accuracy in a color raster scanner. 4,342,047, Cl. 358-80.000.
Niese, Manfred: *See—*
Putter, Rolf; Pfister, Theodor; Niese, Manfred; and Wenzl, Peter, 4,341,719, Cl. 260-509.000.
Nilsen, Carl J., to SWS Incorporated. Method of butt welding sheet metal. 4,341,943, Cl. 219-121.0LD.
Nippon Electric Co., Ltd.: *See—*
Yokoo, Kiyotaka; Mitsuhashi, Sadayuki; and Wakamatsu, Kazutoshi, 4,342,016, Cl. 335-79.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Ishigaki, Yuzo, 4,342,006, Cl. 330-259.000.
Ogita, Minoru, 4,342,000, Cl. 329-103.000.
Nippon Kogaku K.K.: *See—*
Kanno, Hideo; and Suzuki, Yoshiki, 4,341,436, Cl. 350-65.000.
Toyoda, Kenji; and Hirano, Haruo, 4,341,448, Cl. 354-59.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Matsubara, Hiroyoshi; Takeshige, Kenji; Osuka, Tatsumi; Nagamine, Takashi; Hirano, Osamu; Tanaka, Jinkichi; Watanabe, Itaru; and Suzuki, Motoaki, 4,341,938, Cl. 219-61.000.
Nippon Petrochemicals Co., Ltd.: *See—*
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, 4,341,665, Cl. 252-522.00R.
Nippon Soken, Inc.: *See—*
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,341,189, Cl. 123-425.000.
Nippon Telegraph & Telephone Public Corp.: *See—*
Mizushima, Yoshihiko; Takeda, Akitsu; Komiya, Kazumi; Sakaue, Masahiro; Ogino, Toshio; Itoh, Hideo; and Oka, Masayoshi, 4,341,954, Cl. 250-211.00J.
Nippon Tsushin Kogyo K.K.: *See—*
Shinoi, Tsuyoshi; and Hamatani, Fumikazu, 4,341,927, Cl. 179-2.0DP.
Nishida, Katsutoshi; Komatsu, Michiyasu; and Miyano, Tadashi, to Tokyo Shibaura Electric Co., Ltd. Si_3N_4 Ceramic powder material and method for manufacturing the same. 4,341,874, Cl. 501-97.000.
Nishii, Yasuo: *See—*
Aoki, Takao; Miyakoshi, Hideo; Hirasawa, Yoshihei; and Nishii, Yasuo, 4,341,774, Cl. 424-236.000.
Nishimura, Yoshiro: *See—*
Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, 4,341,784, Cl. 424-256.000.
Nishino, Toru: *See—*
Saito, Masumi; Hirai, Eiichi; Endo, Masao; and Nishino, Toru, 4,341,560, Cl. 106-87.000.
Nishio, Kanemitsu; and Suzuki, Takashi, to NGK Spark Plug Co., Ltd. Ignition system for spark plugs capable of removing carbon deposits. 4,341,195, Cl. 123-598.000.
Nissan Motor Company, Limited: *See—*
Abo, Toshimi; and Kanegae, Hidetoshi, 4,341,071, Cl. 60-39.14R.
Chiba, Tatsuya, 4,341,414, Cl. 296-56.000.
Morimura, Hiroaki; and Abe, Masanori, 4,341,397, Cl. 280-688.000.
Tsunoda, Masakazu; and Kawasaki, Teruo, 4,342,023, Cl. 340-52.00F.
Nitschke, Norman C.; and McMaster, Ronald A. Roll drive mechanism for glass sheet processing equipment. 4,341,546, Cl. 65-163.000.
Nixdorf Computer AG: *See—*
Kohlhage, Hermann, 4,341,100, Cl. 70-63.000.
NL Industries, Inc.: *See—*
Blattel, Steven R.; and Hilscher, Larry W., 4,341,645, Cl. 252-8.50C.
Noguchi, Mikio; Kobayashi, Kazuho; Takenaka, Shigeo; and Shimbo, Masaru, to Tokyo Shibaura Denki Kabushiki Kaisha. Flat display device. 4,341,980, Cl. 315-169.100.
Nomura, Suguru: *See—*
Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,341,841, Cl. 428-414.000.
Nomura, Tutomu: *See—*
Kubo, Osamu; Ido, Tadashi; Nomura, Tutomu; and Inomata, Koichiro, 4,341,648, Cl. 252-62.630.
Noonan, Charles M.: *See—*
Schreffler, Dean A.; and Noonan, Charles M., 4,341,819, Cl. 427-195.000.
Norberg, Kenneth H. Invalid walker. 4,341,381, Cl. 272-70.400.
Norca Corporation: *See—*
Fedele, Franco, 4,341,494, Cl. 410-45.000.
Nord, Rune, to Nord, Torbjorn. Device for connecting a pressure fluid source to a fluid motor. 4,341,235, Cl. 137-312.000.
Nord, Torbjorn: *See—*
Nord, Rune, 4,341,235, Cl. 137-312.000.
Nordischer Maschinenbau Rud. Baader GmbH and Co Kg: *See—*
Braeger, Horst, 4,340,995, Cl. 17-62.000.
Norsk Hydro a.s.: *See—*
Groenhof, Hendrik C., 4,341,752, Cl. 423-497.000.
North American Philips Consumer Electronics Corp.: *See—*
Dickinson, William A., 4,342,049, Cl. 358-246.000.
Northern Telecom Limited: *See—*
Stanson, Mark V.; and Riley, Garth I., 4,341,928, Cl. 179-51.0AA.
Stewart, Charles G.; and Sood, Prem L., 4,342,079, Cl. 364-200.000.
Nortron Corporation: *See—*
Jackson, Bernie F.; and Nelson, Hoyt H., 4,341,119, Cl. 73-462.000.
Noto, Takao: *See—*
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,341,776, Cl. 424-246.000.
Novak, Frederick C., to TII Corporation. Process for treating cyanide and cyanate containing wastewaters. 4,341,641, Cl. 210-752.000.
Novo, Mario C.: *See—*
Settlemire, David J.; Ide, John D.; and Novo, Mario C., 4,342,120, Cl. 455-222.000.
Novotny, Milos: *See—*
Mackrle, Svatopluk; and Novotny, Milos, 4,341,630, Cl. 210-221.200.
Numata, Saburo; and Kobayashi, Fumio, to Fuji Photo Optical Co., Inc. Magnet control device for cameras. 4,342,018, Cl. 335-270.000.
Nutrition 21: *See—*
Spallholz, Julian E., 4,341,757, Cl. 424-8.000.
Nutz, Ludwig: *See—*
Utner, Ferdinand; Vetter, Harald; and Nutz, Ludwig, 4,342,020, Cl. 338-314.000.
N.V. Optische Industrie "De Oude Delft": *See—*
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Obata, Haruyuki: *See—*
Ishikawa, Norikatsu; Obata, Haruyuki; Onaka, Hidemi; Tate, Takao; Tanahashi, Toshio; and Hagino, Isamu, 4,341,190, Cl. 123-439.000.
Obenour, Mary C., to Procter & Gamble Company, The. Breathable backsheet for disposable diapers. 4,341,216, Cl. 128-287.000.
Occidental Petroleum Corporation: *See—*
Woinsky, Samuel G., 4,341,077, Cl. 60-641.300.
Occidental Research Corporation: *See—*
Green, Norman W., 4,341,598, Cl. 202-99.000.
Oce-Nederland B.V.: *See—*
Vola, Mathias J. J. M., 4,341,464, Cl. 355-16.000.
Ochiai, Yuetsu: *See—*
Suzuki, Kazufumi; Kumagai, Shumi; Ochiai, Yuetsu; and Mizoguchi, Akira, 4,342,051, Cl. 358-283.000.
Oda, Akira: *See—*
Chino, Koichi; Yusa, Hideo; Oda, Akira; Miura, Hideichi; Horiuchi, Susumu; and Takamura, Yoshiyuki, 4,341,595, Cl. 159-6.00W.
Oda, Yoshio; Morimoto, Takeshi; and Suzuki, Kohji, to Asahi Glass Company, Limited. Electrolytic cell. 4,341,612, Cl. 204-253.000.
Ogasawara, Hirotake, to Yoshida Industry Co., Ltd. Virgin sealed inner closure cap. 4,341,319, Cl. 215-307.000.
Ogawa, Haruki: *See—*
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,341,776, Cl. 424-246.000.
Ogawa, Masasi: *See—*
Toyama, Tadao; Nakao, Sho; Shiba, Keisuke; Sera, Hidefumi; and Ogawa, Masasi, 4,341,856, Cl. 430-156.000.
Ogino, Toshio: *See—*
Mizushima, Yoshihiko; Takeda, Akitsu; Komiya, Kazumi; Sakaue, Masahiro; Ogino, Toshio; Itoh, Hideo; and Oka, Masayoshi, 4,341,954, Cl. 250-211.00J.
Ogita, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. FM Detecting circuit. 4,342,000, Cl. 329-103.000.
Ogura, Haruo; and Takeda, Kazuyoshi, to Ogura, Haruo. Imido carbonate compound, production thereof and uses thereof as reagent for forming active ester of amino acids. 4,341,707, Cl. 260-326.00C.
Ogura, Masaki, to Ricoh Company, Ltd. Copying machine with collating apparatus. 4,341,462, Cl. 355-14.0SH.
O'Hara, John J.: *See—*
Wojcieson, Raymond J.; Fuhrman, Fred L.; and O'Hara, John J., 4,341,512, Cl. 431-284.000.

Ohba, Yozo: *See—*
Toyoda, Takashi; Ohba, Yozo; and Yamanaka, Masaaki, 4,341,880, Cl. 524-101.000.

Ohloff, Gunther: *See—*
Schulte-Elte, Karl-Heinrich; Hauser, Arnold; and Ohloff, Gunther, 4,341,897, Cl. 549-355.000.
Skorianetz, Werner; and Ohloff, Gunther, 4,341,666, Cl. 252-522.00R.

Ohnmacht, Helmut; and Meywald, Klaus, to Fritz Eichenauer GmbH & Co. KG. Electrical resistance heating element. 4,341,946, Cl. 219-375.000.

Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, to NHK Spring Co., Ltd.; and Yokohama Kiko Co., Ltd. Multi-layer coating protective film form. 4,341,841, Cl. 428-414.000.

Ohno, Fumiaki: *See—*
Kitamura, Masatsugu; Onoye, Hideo; Ohno, Fumiaki; Ono, Tsuyoshi; Kishima, Yukihiro; and Morita, Yutaka, 4,342,110, Cl. 369-252.000.

Ohsawa, Shiuji. Yarn-break/yarn-stop detecting device. 4,341,958, Cl. 250-561.000.

Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, to Chugai Seiyaku Kabushiki Kaisha. Cephalosporin derivatives. 4,341,776, Cl. 424-246.000.

Oide, Kunimasa, to Daichiku Co., Ltd. Laminated rotary grinder and method of fabrication. 4,341,532, Cl. 51-297.000.

Oishi, Kengo, to Fuji Photo Film Co., Ltd. Video tape cassette. 4,341,365, Cl. 242-199.000.

Oishi, Norio; Okamoto, Kouichi; Furukado, Shoji; and Sakuyama, Masaki, to Mitsubishi Denki Kabushiki Kaisha. Device for leading cooling liquid out of rotary electric machine with liquid cooled rotor. 4,341,093, Cl. 62-505.000.

Oji Yuka Goseishi Kabushiki Kaisha: *See—*
Toyoda, Takashi; Ohba, Yozo; and Yamanaka, Masaaki, 4,341,880, Cl. 524-101.000.

Oka, Masayoshi: *See—*
Mizushima, Yoshihiko; Takeda, Akitsu; Komiya, Kazumi; Sakaue, Masahiro; Ogino, Toshio; Itoh, Hideo; and Oka, Masayoshi, 4,341,954, Cl. 250-211.00J.

Okabe, Masao: *See—*
Sugio, Akitoshi; Masu, Masanobu; Okabe, Masao; Matunaga, Masatugu; and Ishiyama, Kozo, 4,341,879, Cl. 524-91.000.

Okamoto, Kouichi: *See—*
Oishi, Norio; Okamoto, Kouichi; Furukado, Shoji; and Sakuyama, Masaki, 4,341,093, Cl. 62-505.000.

Okano, Sadao; and Homma, Hideo, to Hitachi, Ltd. Method of manufacturing semiconductor device. 4,341,011, Cl. 29-590.000.

Okazaki, Hiroshi: *See—*
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,341,776, Cl. 424-246.000.

Okuo, Takayasu; Masaki, Takaki; and Kobayashi, Keisuke, to Agency of Industrial Science & Technology; Ministry of International Trade & Industry; and Toray Industries, Inc. Composite electrode and insulating wall elements for magnetohydrodynamic power generating channels characterized by fibers in a matrix. 4,341,965, Cl. 310-11.000.

Oliff, James R., to Mead Corporation, The. Wrap-around carrier. 4,341,309, Cl. 206-429.000.

Olin Corporation: *See—*
Visger, Robert L.; and Plano, Mark A., 4,341,875, Cl. 521-164.000.

Oliver, H. LeRoy: *See—*
Knowles, William F.; Knowles, Larry F.; and Oliver, H. LeRoy, 4,341,420, Cl. 297-280.000.

Olson, Theodore V. Pronounced flexure coupling devices for elongate irrigation pipes. 4,341,405, Cl. 285-5.000.

Oiszewski, Daniel P., to Ego Lures Company. Fishing lure with inherent orienting ballast. 4,341,032, Cl. 43-42.450.

Olympic Fishing Tackles Co., Ltd.: *See—*
Kawada, Minoru, 4,341,366, Cl. 242-220.000.

Olympus Optical Co., Ltd.: *See—*
Hosono, Saburo; and Miyamoto, Yoshihiko, 4,341,205, Cl. 128-6.000.
Osanai, Akira, 4,341,981, Cl. 318-6.000.
Osanai, Akira, 4,342,055, Cl. 360-69.000.
Osanai, Akira, 4,342,058, Cl. 360-96.500.
Sato, Masanobu; and Fukuoka, Norio, 4,342,106, Cl. 369-7.000.

Omura, Takashi: *See—*
Tezuka, Yasuo; Sunami, Masaki; Omura, Takashi; and Kayane, Yutaka, 4,341,699, Cl. 260-153.000.

Onaka, Hidemi: *See—*
Ishikawa, Norikatsu; Obata, Haruyuki; Onaka, Hidemi; Tate, Takao; Tanahashi, Toshio; and Hagino, Isamu, 4,341,190, Cl. 123-439.000.

O'Neill, Brian C.: *See—*
Caccoma, George A.; Koestner, Joseph H.; O'Neill, Brian C.; and Tappen, Frank M., 4,342,090, Cl. 364-491.000.

Onischak, Michael: *See—*
Gidaspow, Dimitri; Lavan, Zalman; and Onischak, Michael, 4,341,539, Cl. 55-278.000.

Ono, Hiromi: *See—*
Miyazaki, Takeshi; and Ono, Hiromi, 4,341,177, Cl. 114-125.000.

Ono, Tsuyoshi: *See—*
Kitamura, Masatsugu; Ono, Tsuyoshi; and Onoye, Hideo, 4,342,108, Cl. 369-216.000.
Kitamura, Masatsugu; Onoye, Hideo; Ohno, Fumiaki; Ono, Tsuyoshi; Kishima, Yukihiro; and Morita, Yutaka, 4,342,110, Cl. 369-252.000.

Onoye, Hideo: *See—*
Kitamura, Masatsugu; Ono, Tsuyoshi; and Onoye, Hideo, 4,342,108, Cl. 369-216.000.
Kitamura, Masatsugu; Onoye, Hideo; Ohno, Fumiaki; Ono, Tsuyoshi; Kishima, Yukihiro; and Morita, Yutaka, 4,342,110, Cl. 369-252.000.

Ootsuka, Yoshinori: *See—*
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,341,189, Cl. 123-425.000.

Origin Electric Co., Ltd.: *See—*
Mizushima, Yoshihiko; Takeda, Akitsu; Komiya, Kazumi; Sakaue, Masahiro; Ogino, Toshio; Itoh, Hideo; and Oka, Masayoshi, 4,341,954, Cl. 250-211.00J.

Orlowski, Gerald J.; and Dugle, Thomas E., to Armour and Company. Cage for compressing food articles. 4,341,154, Cl. 100-194.000.

Oronzio deNora Impianti Elettrochimici S.p.A.: *See—*
DeNora, Oronzio; and Spaziante, Placido M., 4,341,604, Cl. 204-98.000.

Orrison, William W. Air foil with reversible camber. 4,341,176, Cl. 114-102.000.

Orsborn, Jesse H.: *See—*
Fachini, Robert M.; Covington, Michael J.; and Orsborn, Jesse H., 4,341,423, Cl. 298-18.000.

Osanai, Akira, to Olympus Optical Co., Ltd. Rotary direction reversing apparatus for a motor of a microcassette tape transport. 4,341,981, Cl. 318-6.000.

Osanai, Akira, to Olympus Optical Co., Ltd. Automatic reverse tape recorder. 4,342,055, Cl. 360-69.000.

Osanai, Akira, to Olympus Optical Co., Ltd. Apparatus for running magnetic tapes. 4,342,058, Cl. 360-96.500.

Oscarsson, Rolf A., to Strimbeck, Davis & Soloway, a part interest. Manufacture of hollow fiber fluid fractionating cells. 4,341,005, Cl. 29-411.000.

Ose, Earl E.; and Kirst, Herbert A., to Eli Lilly and Company. Method of controlling ureaplasma infections. 4,341,770, Cl. 424-181.000.

Ose, Earl E.: *See—*
Kirst, Herbert A.; and Ose, Earl E., 4,341,771, Cl. 424-181.000.

Oshima, Kazunori: *See—*
Kageyama, Yoichi; Hatano, Masakatsu; Koyama, Toru; Kaneko, Takao; Murayama, Masayosi; and Oshima, Kazunori, 4,341,659, Cl. 252-435.000.

Osuka, Tatsumi: *See—*
Matsubara, Hiroyoshi; Takeshige, Kenji; Osuka, Tatsumi; Nagamine, Takashi; Hirano, Osamu; Tanaka, Jinkichi; Watanabe, Itaru; and Suzuki, Motoaki, 4,341,938, Cl. 219-61.000.

Otabe, Kisaburo: *See—*
Uchida, Tomio; and Otabe, Kisaburo, 4,341,026, Cl. 37-117.500.

Otani, Masato: *See—*
Ishii, Hiromichi; Matsuzawa, Hideo; Kobayashi, Masao; and Otani, Masato, 4,341,900, Cl. 562-532.000.

Otter Controls Limited: *See—*
Foster, Terance J. C., 4,341,932, Cl. 200-74.000.

Otting, Billy J., to Otting Machine Company, Inc. Jet pattern dyeing of material, particularly carpet. 4,341,098, Cl. 68-205.00R.

Otting Machine Company, Inc.: *See—*
Otting, Billy J., 4,341,098, Cl. 68-205.00R.

Outboard Marine Corporation: *See—*
Nerstrom, James S., 4,341,188, Cl. 123-324.000.

Ovshinsky, Stanford R.; and Izu, Masatsugu, to Energy Conversion Devices, Inc. Method for optimizing photoresponsive amorphous alloys and devices. 4,342,044, Cl. 357-2.000.

Owens-Corning Fiberglas Corporation: *See—*
Kopena, David M., 4,341,003, Cl. 29-239.000.
Vermilion, Donn R.; and Hammond, Donald J., 4,341,674, Cl. 524-156.000.

Owens-Illinois, Inc.: *See—*
Arnold, Emmons S., deceased, 4,341,338, Cl. 229-23.0BT.
Smalley, Ned J., 4,341,318, Cl. 215-225.000.
Taylor, Lynn J.; and Grier, John D., 4,341,820, Cl. 427-226.000.

Oy Partek Ab: *See—*
Laitinen, Heikki, 4,341,500, Cl. 414-498.000.

OY. Tampella AB: *See—*
Anttila, Antero, 4,341,271, Cl. 175-24.000.

Oy Wartsila Ab: *See—*
Koutonen, Pauli, 4,341,586, Cl. 156-518.000.

Ozeki, Kenichi; Wada, Toyoji; Ito, Kunio; Tomimori, Tetsuo; Takagi, Isao; and Nekado, Mitsunobu, to Tokyo Shibaura Denki Kabushiki Kaisha. Peelable film-forming urethane/isocyanate paints. 4,341,687, Cl. 524-500.000.

Pack River Management Company: *See—*
Critchell, Kenneth G.; and Brown, James M., Jr., 4,341,248, Cl. 144-378.000.

Paerels, Gerard B.: *See—*
van Gilse, Jaap; and Paerels, Gerard B., 4,341,548, Cl. 71-67.000.

Pako Corporation: *See—*
Rubin, Barry P., 4,341,453, Cl. 354-298.000.
Stewart, James F., 4,341,465, Cl. 355-36.000.

Palermiti, Frank M.; and Schley, Ronald F., to Exxon Research & Engineering Co. Sheet feeding for a facsimile system with anti-static electricity additive. 4,342,043, Cl. 346-163.000.

Pallos, Ferenc M.; Brokke, Mervin E.; and Arneklev, Duane R., to Stauffer Chemical Company. Herbicide compositions. 4,341,550, Cl. 71-88.000.

Palmer, John R.; and Rowlands, Kenneth C., to Remington Arms Company, Inc. Percussion firing mechanism for industrial guns. 4,341,031, Cl. 42-23.000.

Palmer, Walter E.: *See*—
Gallant, Stuart L.; Woods, Samuel; and Palmer, Walter E., 4,341,225, Cl. 128-710.000.

Pampalone, Thomas R., to RCA Corporation. Aqueous developable poly(olefin sulfone) terpolymers. 4,341,861, Cl. 430-296.000.

Pangburn, William W., to General Electric Co. Laminated dynamoelectric machine rotor having cast conductors and radial coolant ducts and method of making same. 4,341,966, Cl. 310-61.000.

Pappas, Michael J.: *See*—
Buechel, Frederick F.; and Pappas, Michael J., 4,340,978, Cl. 3-1.911.

Parenti, Aurelio J.: *See*—
Sekmakas, Kazys; Shah, Raj; and Parenti, Aurelio J., 4,341,681, Cl. 524-555.000.

Park, Dong-Sil; Breiter, Manfred W.; Dunn, Bruce S.; and Navias, Louis, to General Electric Company. Sodium resistant sealing glasses and sodium-sulfur cells sealed with said glasses. 4,341,849, Cl. 429-104.000.

Park, Joon S.: *See*—
Deichert, William G.; Friends, Gary D.; Melpolder, John B.; and Park, Joon S., 4,341,889, Cl. 528-26.000.

Parker, Clive; and Pearl, Antony, to Varian Associates, Inc. Atomic absorption spectroscopy. 4,341,470, Cl. 356-307.000.

Parker, Louis W.; and Hedges, Rhey W., to Parker, Louis W. Electronic commutation for direct current electric motors. 4,341,984, Cl. 318-138.000.

Parlman, Robert M.; and Kimble, James B., to Phillips Petroleum Company. S-Allyl-S'-n-butyl-trithiocarbonate. 4,341,715, Cl. 260-455.00B.

Parson, Roger F., to Jeno's, Inc. Food processing machine. 4,341,136, Cl. 83-158.000.

Pasquini, William G. Container for bottles. 4,341,308, Cl. 206-427.000.

Passey, Douglas A.; and Jerva, Ronald E., to Allen-Bradley Company. Numerical control servo drive circuit. 4,342,077, Cl. 364-183.000.

Pastor, Ricardo C.: *See*—
Robinson, Morton; Pastor, Ricardo C.; and Braunstein, Morris, 4,341,873, Cl. 501-40.000.

Patient Technology, Inc.: *See*—
Goldstein, Harold; and Montren, William, 4,341,117, Cl. 374-170.000.

Patricca, Steven E.; and Buchwalter, Stephen L., to PPG Industries, Inc. Self-curable resinous compositions containing N-methylol amide groups useful in coating applications. 4,341,676, Cl. 523-417.000.

Patterson, Richard A.: *See*—
Seabold, Thomas W.; Patterson, Richard A.; and de Neui, Richard P., 4,341,585, Cl. 156-443.000.

Paulve, Marcel L. A. Switching device comprising at least one contact member mounted pivotally about axis parallel to the axis of a casing, against the action of a leaf spring mounted in curved position between said casing and said member. 4,341,931, Cl. 200-30.00A.

Pearl, Antony: *See*—
Parker, Clive; and Pearl, Antony, 4,341,470, Cl. 356-307.000.

Pechey, David T.; and Coy, John H., to Ciba-Geigy Corporation. Production of pigments. 4,341,701, Cl. 260-161.000.

Pedersen, Carl O.: *See*—
Maurer, Herman J.; and Pedersen, Carl O., 4,341,501, Cl. 414-694.000.

Pelda, Frederick J.; and Wirth, Eugene A., to Pitney Bowes Inc. Fire extinguishing device for electrophotocopier. 4,341,945, Cl. 219-216.000.

Penn, Thomas C.: *See*—
Shortes, Samuel R.; and Penn, Thomas C., 4,341,592, Cl. 156-643.000.

Penn, William B.; and Zgraggen, Martin A., to General Electric Co. Dynamoelectric machine commutator structure and method of making same. 4,341,972, Cl. 310-233.000.

Pepe, Russell J.: *See*—
Beckerman, Howard L.; and Pepe, Russell J., 4,341,170, Cl. 112-158.00E.

Perez, Arthur: *See*—
Ibrahim, Fayez F.; and Perez, Arthur, 4,341,089, Cl. 62-246.000.

Perkin-Elmer Corporation, The: *See*—
Kohman, Wayne E.; and Maleri, E. Joseph, 4,341,582, Cl. 156-345.000.

Perlman, David J.: *See*—
Chaudhari, Praveen; Kiessling, John B.; Perlman, David J.; Tynan, Eugene E.; and von Gutfeld, Robert J., 4,341,942, Cl. 219-121.0LD.

Perrett, T. Robert; Sutter, Franz; and Gisin, Paul, to Synthes AG. Device for producing a hole in a bone. 4,341,206, Cl. 128-92.0EB.

Perry, John H., to Pfizer Inc. Stereotactic surgery apparatus and method. 4,341,220, Cl. 128-630.000.

Pertuis, Philippe: *See*—
Laurent, Jean; Monnet, Bernard; and Pertuis, Philippe, 4,341,511, Cl. 425-150.000.

Pet, Inc.: *See*—
Limousin, Jean-Louis, 4,341,057, Cl. 53-553.000.

Peters, Klaus-Jurgen: *See*—
Knapp, Heinrich; Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; Jaggle, Gunther; and Schelhas, Peter, 4,341,192, Cl. 123-452.000.

Peters, Peter, to Medtronic, Inc. Temporary lead with insertion tool. 4,341,226, Cl. 128-784.000.

Peterson, Borje; and Lundqvist, Ulf, to FFV Industriprodukter AB. Hydraulically expandable friction coupling. 4,341,484, Cl. 403-5.000.

Peterson, Richard H. Electronic pipe valve. 4,341,145, Cl. 84-337.000.

Peterson, Robert R., to Barry Wright Corporation. Blade retention system. 4,341,499, Cl. 416-134.00A.

Peterson, Rudolph A., Jr.: *See*—
Moore, James W.; and Peterson, Rudolph A., Jr., 4,341,284, Cl. 181-272.000.

Petrolite Corporation: *See*—
Buriks, Rudolf S.; and Lovett, Eva G., 4,341,887, Cl. 526-263.000.
Quinlan, Patrick M., 4,341,657, Cl. 252-390.000.

Petrushka, Robert G.: *See*—
Koros, Peter J.; and Petrushka, Robert G., 4,341,554, Cl. 75-58.000.

Pfau, Jean: *See*—
Briffod, Jean-Paul; Martin, Roland; Pfau, Jean; Bommeli, Bernard; and Schnellmann, Danielle, 4,341,939, Cl. 219-69.00W.

Pfefferle, William C. Method of catalytically coating low porosity ceramic surfaces. 4,341,662, Cl. 252-462.000.

Pfister, Max, to CDM Connectors Development & Mfg. AG. Electric plug contact. 4,341,434, Cl. 339-256.00R.

Pfister, Theodor: *See*—
Putter, Rolf; Pfister, Theodor; Niese, Manfred; and Wenzl, Peter, 4,341,719, Cl. 260-509.000.

Pfizer Inc.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,341,906, Cl. 568-328.000.
Barnish, Ian T.; and Cross, Peter E., 4,341,792, Cl. 424-275.000.
Bax, Ronald F., 4,341,956, Cl. 250-214.00C.
Perry, John H., 4,341,220, Cl. 128-630.000.

Philip Morris Incorporated: *See*—
Keritsis, Gus D.; and Lowitz, David A., 4,341,228, Cl. 131-354.000.

Phillipp, Robert G.; Apple, Theodore S.; and Ernest, Paul W., to General Electric Company. Jacketed lamp having transversely mounted arc tube. 4,341,975, Cl. 313-25.000.

Phillips Petroleum Company: *See*—
Burns, Lyle D., 4,341,529, Cl. 44-63.000.
Hsieh, Henry L.; and Udipi, Kishore, 4,341,672, Cl. 523-451.000.
Parlman, Robert M.; and Kimble, James B., 4,341,715, Cl. 260-455.00B.
Poska, Forrest L., 4,341,619, Cl. 208-11.0LE.
Vanderveen, John W., 4,341,750, Cl. 423-450.000.

Phillips, Robert F.: *See*—
McIntyre, James A.; Phillips, Robert F.; and Lefevre, Joseph D., 4,341,606, Cl. 204-98.000.

Phy, Charles L.: *See*—
Williams, Donald F.; and Phy, Charles L., 4,341,055, Cl. 53-462.000.

Picaud, Alain: *See*—
Mainot, Jean-Louis; and Picaud, Alain, 4,341,169, Cl. 112-121.120.

Pichler, Ludwig: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Hoefke, Wolfgang; and Pichler, Ludwig, 4,341,788, Cl. 424-273.00R.

Pierson, Joseph E.: *See*—
Beall, George H.; and Pierson, Joseph E., 4,341,544, Cl. 65-30.140.

Pilgrim Electric Co.: *See*—
Kallman, Mathew R., 4,342,013, Cl. 333-181.000.

Pinna Corporation: *See*—
Britt, John P., 4,341,303, Cl. 206-343.000.

Pinschmidt, Robert K., Jr.: *See*—
Milligan, Barton; and Pinschmidt, Robert K., Jr., 4,341,898, Cl. 560-24.000.

Pintek, Inc.: *See*—
Hatch, David A.; and White, Paul J., 4,341,428, Cl. 339-14.00R.

Pioneer Electronic Corporation: *See*—
Imai, Kunio; Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,341,838, Cl. 428-338.000.

Pitney Bowes Inc.: *See*—
Cruz-Uribe, Antonio S.; Lewis, Peter J.; and Miller, Peter T., 4,342,042, Cl. 346-140.00R.
Pelda, Frederick J.; and Wirth, Eugene A., 4,341,945, Cl. 219-216.000.

Pittaway, Alan K.: *See*—
Harrison, Christopher R. B.; and Pittaway, Alan K., 4,341,016, Cl. 30-262.000.

Plank, Charles J.; Rosinski, Edward J.; and Rubin, Mae K., to Mobil Oil Corporation. Method for producing zeolites. 4,341,748, Cl. 423-328.000.

Plano, Mark A.: *See*—
Visger, Robert L.; and Plano, Mark A., 4,341,875, Cl. 521-164.000.

Plapp, Gunther, to Robert Bosch GmbH. Apparatus for burnoff of a resistor, in particular of a hot wire in an air flow rate meter of an internal combustion engine. 4,341,114, Cl. 73-118.000.

Plaschy, Martin: *See*—
Baumgartner, August; and Plaschy, Martin, 4,341,065, Cl. 57-22.000.

Plaskolite, Inc.: *See*—
Gift, Warren H., 4,341,883, Cl. 525-82.000.

Plessing, Jurgen: *See*—
Kemmler, Gerhard; Wieczorek, Herbert; and Plessing, Jurgen, 4,341,738, Cl. 422-184.000.

Plumley, Roger D.: *See—*
Wilcox, Arnold G., Jr.; and Plumley, Roger D., 4,341,424, Cl. 299-57.000.
Pol, Manfred: *See—*
Streicher, Rudolf; and Pol, Manfred, 4,341,425, Cl. 301-64.0SH.
Polaroid Corporation: *See—*
Baker, Philip G.; and Matthews, Gerald L., 4,341,454, Cl. 354-304.000.
Biber, Conrad H., 4,341,447, Cl. 354-25.000.
Wray, William R., 4,342,059, Cl. 360-123.000.
Pollet, Jean-Pierre, to Societe d'Etudes de Machines Thermiques S.E.M.T. Fluid-cooled valve housing for an engine having two exhaust valves per cylinder. 4,341,185, Cl. 123-41.850.
Pollington, Bernard M. Tool grind fixture. 4,341,046, Cl. 51-225.000.
Pollman, Frederic W., to Sundstrand Corporation. Hydromechanical transmissions. 4,341,131, Cl. 74-687.000.
Polymer Corporation, The: *See—*
Schreffler, Dean A.; and Noonan, Charles M., 4,341,319, Cl. 427-195.000.
Pont-a-Mousson: *See—*
Laurent, Jean; Monnet, Bernard; and Pertuis, Philippe, 4,341,511, Cl. 425-150.000.
Population Council, Inc., The: *See—*
Robertson, Dale N.; and Braun, John, 4,341,728, Cl. 264-161.000.
Porath, Asher: *See—*
Bloch, Moshe R.; Sasson, Joel; Ginzburg, Margaret E.; Goldman, Zvi; Ginzburg, Ben Z.; Garti, Nissim; and Porath, Asher, 4,341,038, Cl. 47-1.400.
Portasauna Limited: *See—*
Vanags, Paul, 4,340,981, Cl. 4-536.000.
Poska, Forrest L., to Phillips Petroleum Company. Supercritical tar sand extraction. 4,341,619, Cl. 208-11.0LE.
Possati, Mario, to Finike Italiana Marposs S.p.A. Gauge for checking linear dimensions. 4,341,019, Cl. 33-172.00E.
Poteat, Dewey E., to Alba-Waldensian, Incorporated. Stretchable garment knit of cotton yarn. 4,341,095, Cl. 66-177.000.
Potter, John H. Mechanic's tool box and head rest. 4,340,985, Cl. 5-442.000.
Power Systems, Inc.: *See—*
Lahti, Abbott W.; and Russell, Stephen R., 4,341,982, Cl. 318-51.000.
Powers, John W.: *See—*
Marcantonio, Arnold F.; Kress, Paul J.; and Powers, John W., 4,341,878, Cl. 524-3.000.
PPG Industries, Inc.: *See—*
Bier, David A., 4,341,334, Cl. 225-96.500.
Das, Balbhadra; and Tucker, Billie D., 4,341,877, Cl. 523-409.000.
DeTorre, Robert P., 4,341,139, Cl. 83-886.000.
Lewis, Charles W., 4,341,576, Cl. 156-106.000.
Patricca, Steven E.; and Buchwalter, Stephen L., 4,341,676, Cl. 523-417.000.
Tamosauskas, Albert E., 4,341,677, Cl. 523-421.000.
Prasad, Ravi; Gottesman, Martin; and Scarella, Robert A., to General Foods Corporation. Decaffeination of aqueous roasted coffee extract. 4,341,804, Cl. 426-387.000.
Presto Lock, Inc.: *See—*
Bako, Lazlo, 4,341,101, Cl. 70-312.000.
Prewo, Karl M.; and Brennan, John J., to United Technologies Corporation. Internal combustion engine and composite parts formed from silicon carbide fiber-reinforced ceramic or glass matrices. 4,341,826, Cl. 428-35.000.
Prewo, Karl M., to United Technologies Corporation. Composite bearings, seals and brakes. 4,341,840, Cl. 428-408.000.
Price, Douglas R. Method of and apparatus for detecting leakage into the bilge of a sea vessel. 4,341,178, Cl. 114-183.00R.
Price, T. David. Extension table assembly for power tools. 4,341,247, Cl. 144-287.000.
Prince Corporation: *See—*
Marcus, Konrad H.; and Hochreiter, Robert D., 4,341,023, Cl. 33-363.00K.
Procter & Gamble Company, The: *See—*
Ferguson, Susan P.; and Landrigan, William F., 4,341,217, Cl. 128-290.00W.
McCoy, Stephen A., 4,341,814, Cl. 426-607.000.
Obenour, Mary C., 4,341,216, Cl. 128-287.000.
Proske, Joachim: *See—*
Krueger, Roland; Proske, Joachim; Rosner, Ortwin; and Swarofsky, Walter, 4,341,451, Cl. 354-289.000.
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Hopkins, Thomas R., 4,341,802, Cl. 426-60.000.
Prusak, John J.; and Whitehurst, Marshall L., to RCA Corporation. Apparatus for electroforming. 4,341,613, Cl. 204-281.000.
Puar, Deepraj S., to Signetics Corporation. Semiconductor memory array. 4,342,102, Cl. 365-207.000.
Pulsar Laboratories, Inc.: *See—*
Donoho, David W., 4,341,573, Cl. 149-42.000.
Putter, Rolf; Pfister, Theodor; Niese, Manfred; and Wenzl, Peter, to Bayer Aktiengesellschaft. Process for the preparation of 1-amino-2-ethoxy-naphthalene-6-sulphonic acid. 4,341,719, Cl. 260-509.000.
Pynor, T. Eric: *See—*
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Quanta Ray Inc.: *See—*
Iwata, Akiyoshi, 4,342,113, Cl. 372-33.000.
Quinlan, Patrick M., to Petrolite Corporation. Use of quaternized derivatives of polymerized pyridines and quinolines as corrosion inhibitors. 4,341,657, Cl. 252-390.000.
R.B.M. S.r.l.: *See—*
Rossi, Giovanni, 4,342,024, Cl. 340-64.000.
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Montgomery, William G., Jr.; and Pynor, T. Eric, 4,341,492, Cl. 406-130.000.
Rackley, Darwin P.; Schneider, Timothy L.; and Woodward, Milton H., to International Business Machines Corporation. Multiple image facsimile. 4,342,052, Cl. 358-287.000.
Rader Companies, Inc.: *See—*
Hamilton, Frank G.; and Kelyman, John, Jr., 4,341,353, Cl. 241-24.000.
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Carpenter, Gary J.; and Radi, Gabor L., 4,341,496, Cl. 410-79.000.
Radtke, Leland J.: *See—*
Schaefer, James R.; and Radtke, Leland J., 4,341,296, Cl. 192-113.00B.
Raemisch, Reinhard; and Hoffmann, Arthur H., to Koenig-Electronic Friedrich W. Koenig. Torque-measuring tape cassette. 4,341,123, Cl. 73-862.090.
Rahim, Waseem: *See—*
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Rambin, Leroy M., Jr., to Ellis Williams Company, The. Pump and engine assembly. 4,341,508, Cl. 417-426.000.
Ramirez, Richard L., to Doico Packaging Corporation. Bowl and cover assembly. 4,341,324, Cl. 220-306.000.
Ranganathan, Ramachandran: *See—*
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Ranten, Richard, to Mistral Incorporated. Ceiling fan with illumination means. 4,342,073, Cl. 362-294.000.
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Habbal, M. Zouheir M., 4,341,528, Cl. 23-230.00B.
Rautiola, Norman A. Electrical relay means. 4,342,017, Cl. 335-128.000.
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Raychem Corporation: *See—*
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Herman, Morris, 4,342,097, Cl. 364-900.000.
Luck, Clarence F., 4,342,114, Cl. 372-87.000.
Monser, George J., 4,342,034, Cl. 343-756.000.
Razzano, John S., to General Electric Company. Diorganopolysiloxane copolymers and process for the preparation thereof. 4,341,888, Cl. 528-14.000.
RCA Corporation: *See—*
Gorog, Istvan; Leedom, Marvin A.; and Wittke, James P., 4,341,472, Cl. 356-399.000.
Hale, John R., 4,341,545, Cl. 65-154.000.
Harford, Jack R., 4,342,005, Cl. 330-254.000.
John, Gunter; Heyman, Philip M.; and Bortfeld, David P., 4,341,952, Cl. 235-487.000.
Pampalone, Thomas R., 4,341,861, Cl. 430-296.000.
Prusak, John J.; and Whitehurst, Marshall L., 4,341,613, Cl. 204-281.000.
Sauer, Donald J., 4,342,001, Cl. 330-9.000.
Stewart, Myron C., 4,342,109, Cl. 369-249.000.
Tamutus, Donald J., 4,341,591, Cl. 156-630.000.
Tomasetti, Charles M.; Harsh, Maurice D.; and McDonie, Arthur F., 4,341,427, Cl. 316-1.000.
van Raalte, John A.; and Fairbanks, David W., 4,341,437, Cl. 350-81.000.
Reade, Clara M., administratrix: *See—*
Andrus, Ronald L.; Reade, Richard F., deceased; and Reade, Clara M., administratrix, 4,341,543, Cl. 65-30.100.
Reade, Richard F., deceased: *See—*
Andrus, Ronald L.; Reade, Richard F., deceased; and Reade, Clara M., administratrix, 4,341,543, Cl. 65-30.100.
Realist, Inc.: *See—*
Burkel, Russell J., 4,341,446, Cl. 353-77.000.
Redick, Richard W., Jr. Adapter for bottled water dispenser. 4,341,328, Cl. 222-83.500.
Reece Corporation, The: *See—*
Mainot, Jean-Louis; and Picaud, Alain, 4,341,169, Cl. 112-121.120.
Reese, Stanton L. Self-adjusting plant insulator with liquid container. 4,341,039, Cl. 47-2.000.
Regan, James L. Tape dispenser. 4,341,587, Cl. 156-523.000.
Regan, Michael T.; Reynolds, George A.; Specht, Donald P.; and VanAllan, James A., to Eastman Kodak Company. Sensitizers for photoconductive compositions. 4,341,894, Cl. 544-333.000.
Regie Nationale des Usines Renault: *See—*
Decouzon, M. Georges; and Carduner, M. Jean J., 4,341,396, Cl. 280-666.000.
Reich, Arthur A. Camouflaged busbar-carrying cover for a wall-incased junction-box. 4,341,920, Cl. 174-66.000.

Reichert, David A., to Mattel, Inc. Electronic basketball game. 4,341,383, Cl. 273-85.00G.

Reimann, Hans: *See—*
Gregor, Carl-Heinz; Reimann, Hans; and Wildmoser, Alfred, 4,341,632, Cl. 210-608.000.

Reiner, Alberto, to Laboratori Prophin S.p.A. Amide derivatives of p-isobutyl-phenyl-propionic acids and related pharmaceutical compositions. 4,341,798, Cl. 424-319.000.

Reissinger, Karl-Hermann: *See—*
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Reiter, Alan C., to United States of America, Army. Apparatus for eliminating power source rise time effects in a time fuze system. 4,341,158, Cl. 102-215.000.

Relyea, Kenneth D.; and Beard, Dale A., to Drustar, Inc. Custom label printer. 4,341,155, Cl. 101-125.000.

Remington Arms Company, Inc.: *See—*
Palmer, John R.; and Rowlands, Kenneth C., 4,341,031, Cl. 42-23.000.

Renner, Wolfgang: *See—*
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Renth, Ernst-Otto: *See—*
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; Hoefke, Wolfgang; Gaida, Wolfram; Streller, Ilse; and Fugner, Armin, 4,341,778, Cl. 424-248.500.

Repass, James T.: *See—*
Glickman, David; Greanias, Evon C.; Repass, James T.; and Rosenbaum, Walter S., 4,342,085, Cl. 364-300.000.

Revitz, Martin: *See—*
Bartholomew, Robert F.; Garbarino, Paul L.; Gardiner, James R.; Revitz, Martin; and Shepard, Joseph F., 4,341,009, Cl. 29-571.000.

Rexnord Inc.: *See—*
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Reynolds, George A.: *See—*
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Reynolds Metals Company: *See—*
Kaplan, Howard I., 4,341,611, Cl. 204-243.00R.

Rho-Chem Corporation: *See—*
Roehl, Ernest O., 4,341,567, Cl. 134-11.000.

Rhone-Poulenc Agrochimie: *See—*
Kremer, Ross A.; and Mansueto, Leopoldo C., Jr., 4,341,899, Cl. 560-103.000.

Rhone-Poulenc Industries: *See—*
Nenner, Thomas; and Foraison, Dominique, 4,341,602, Cl. 204-1.500.

Rice, Darrell; and Baker, Bill E., to Frank W. Murphy Manufacturer, Inc. Voltage reduction safety circuit. 4,342,061, Cl. 361-58.000.

Richard, Douglas B. Roll-up truck cover assembly. 4,341,416, Cl. 296-98.000.

Richardson, John A.: *See—*
Drbal, Vladimir J.; Ginsberg, Guenter; Hodgins, Bruce J.; Richardson, John A.; Britton, Ted W.; Grimm, Richard M.; Bello, Ernesto; Rodriguez, Rodolfo R.; and Saltz, Ivan K., 4,341,736, Cl. 422-100.000.

Richardson, John G., to Harshaw Chemical Company, The. Method of preparing colloidal sol of pentavalent antimony. 4,341,655, Cl. 252-313.00R.

Richardson-Merrell Inc.: *See—*
Carr, Albert A.; Farr, Robert A.; and Kane, John M., 4,341,698, Cl. 260-112.50R.

Richter, Otto G.: *See—*
Lechler, Gerhard B.; and Richter, Otto G., 4,341,122, Cl. 73-862.040.

Ricoh Company, Ltd.: *See—*
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Riffiod, Michel M. R.: *See—*
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Riggs, Edward J.: *See—*
Neathery, David O.; and Riggs, Edward J., 4,341,362, Cl. 242-183.000.

Rikagaku Kenkyusho: *See—*
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Riley, Garth I.: *See—*
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Ring, David F.: *See—*
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Rinker, William R.: *See—*
Landsness, Clifford A.; Rinker, William R.; Barnes, Thomas E.; and White, Maurice E., 4,341,727, Cl. 264-145.000.

Ritzl, Antal, to Swiss Aluminium Ltd. Vehicle superstructure in particular for railway vehicles with hoods which can be expanded outwards and moved with respect to the load bearing platform. 4,341,163, Cl. 105-377.000.

Robert Bosch GmbH: *See—*
Knapp, Heinrich; Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; Jaggle, Gunther; and Schelhas, Peter, 4,341,192, Cl. 123-452.000.
Kuemmerer, Helmut; Moser, Theo; and Genstorfer, Adolf, 4,341,329, Cl. 222-275.000.
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Robertson, Dale N.; and Braun, John, to Population Council, Inc., The. Method for making an IUD with shrinking of a medicated attachment onto a support. 4,341,728, Cl. 264-161.000.

Robertson, James B.: *See—*
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Robinson, Frank: *See—*
Betts, Max W.; Burrow, Thomas R.; Robinson, Frank; and White, Patrick A., 4,341,830, Cl. 428-65.000.

Robinson, Jerrold, to Dimension Weld International Corp., The. Light reflective safety device. 4,341,443, Cl. 350-98.000.

Robinson, Morton; Pastor, Ricardo C.; and Braunstein, Morris, to Hughes Aircraft Company. Fluorozirconate, glass and the process for making the same. 4,341,873, Cl. 501-40.000.

Roccaforte, Harry I., to Champion International Corporation. Take out carton and blank for forming same. 4,341,341, Cl. 229-39.00K.

Rockwell International Corporation: *See—*
Frankel, Milton B.; and Witucki, Edward F., 4,341,712, Cl. 260-349.000.
Stodola, Kevin C., 4,342,112, Cl. 371-68.000.

Rockwool AB: *See—*
Andersson, Arne; Emanuelsson, Jan; Johansson, Ingemar; and Wahlen, Svante, 4,341,597, Cl. 162-127.000.

Rodgers, Douglas N.; Siegler, Manfred; and Shen, David Y. H., to General Electric Company. Automatic sampling apparatus. 4,341,124, Cl. 73-863.010.

Rodgers, Larry C., to Honeywell Inc. Shorting and test mechanism for electrostatic air cleaner. 4,341,537, Cl. 55-139.000.

Rodriguez, Regino: *See—*
Schaller, Maurice; Debs, Victor; Abate, Leo; Dodich, James; Rodriguez, Regino; and Anderle, Joseph A., 4,341,254, Cl. 160-172.000.

Rodriguez, Rodolfo R.: *See—*
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Roehl, Ernest O., to Rho-Chem Corporation. Method of vapor degreasing. 4,341,567, Cl. 134-11.000.

Roesch, Hansjoerg; and Eberle, Helmut, to Siemens Aktiengesellschaft. Device for the detection of and defense against masked helicopters. 4,342,032, Cl. 343-6.0ND.

Roggeveen, Robert P.: *See—*
Hinze, Adrien G.; Roggeveen, Robert P.; and Meulenberg, Abraham J., 4,341,670, Cl. 528-338.000.

Rohner, Karl, to Kempf & Co. AG Forder- und Lagertechnik. Snow treatment apparatus for grooming skiing slopes, trails or the like and a method of operating same. 4,341,027, Cl. 37-197.000.

Rojey, Alexandre; and Cohen, Georges, to Institut Francais du Petrole. Cold and/or heat production involving an absorption cycle and its use for heating buildings. 4,341,084, Cl. 62-101.000.

Rollei-Werke Franke & Heidecke GmbH & Co. KG: *See—*
Krueger, Roland; Proske, Joachim; Rosner, Ortwin; and Swarofsky, Walter, 4,341,451, Cl. 354-289.000.

Rolscreen Company: *See—*
Minter, Mearl J., 4,341,048, Cl. 52-211.000.

Romanin, Mario. Dual vise for skis and the like. 4,341,375, Cl. 269-43.000.

Romankov, Evgeny A.: *See—*
Koshlyak, Leonid L.; Kareev, Jury P.; Romankov, Evgeny A.; Zotov, Sergei N.; Belopolsky, Marx S.; and Kalinovsky, Villen V., 4,341,724, Cl. 264-27.000.

Romeo, Ciriaco: *See—*
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Romey, Ingo: *See—*
Meyer, Frank; and Romey, Ingo, 4,341,301, Cl. 206-219.000.

Roosa, Peter V.: *See—*
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Roosa, Vernon D.; and Roosa, Peter V. Flushing means. 4,341,238, Cl. 137-414.000.

Roper Corporation: *See—*
Butts, Orville R., 4,341,197, Cl. 126-39.0BA.

Rosenbaum, Walter S.: *See—*
Glickman, David; Greanias, Evon C.; Repass, James T.; and Rosenbaum, Walter S., 4,342,085, Cl. 364-300.000.

Rosenberry, George M., Jr.: *See—*
Liebermann, Howard H.; Frischmann, Peter G.; and Rosenberry, George M., Jr., 4,341,845, Cl. 428-592.000.

Rosenhauch, Irwin: *See—*
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Rosinski, Edward J.: *See—*
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Rosner, Ortwin: *See—*
Krueger, Roland; Proske, Joachim; Rosner, Ortwin; and Swarofsky, Walter, 4,341,451, Cl. 354-289.000.

Rossi, Giovanni, to R.B.M. S.r.l. Vehicle burglar alarm apparatus with electronic memory and digital disabling combination. 4,342,024, Cl. 340-64.000.

Rosswurm, Mark A.; and Urish, Joseph M., to Westinghouse Electric Corp. Transistor turn off current sensing circuit. 4,342,076, Cl. 363-56.000.

Rotella, Thomas B. Car ramp and supporting device. 4,341,371, Cl. 254-88.000.

Roth, Carl W.: *See*—
Condon, James E.; Roth, Carl W.; and Gritchen, Ralph A., 4,341,398, Cl. 280-711.000.

Rotondi, Frank A.; and Salley, Howard W. Cleaning system for chimneys. 4,340,989, Cl. 15-249.000.

Rouaud, Christian: *See*—
Abbes, Claude; de Villepoix, Raymond; and Rouaud, Christian, 4,341,406, Cl. 285-408.000.

Rovnyak, George C., to E. R. Squibb & Sons, Inc. Bis-(amidine phenyl)cyclohexanecarboxylic acid ketones, compositions containing same and method of use. 4,341,797, Cl. 424-319.000.

Rowlands, Kenneth C.: *See*—
Palmer, John R.; and Rowlands, Kenneth C., 4,341,031, Cl. 42-23.000.

Rowley, Kathryn E., to Braun, Barbara J. Child restraining article. 4,341,421, Cl. 297-465.000.

Roy, Armand W., to Royal Hinge & Die Co., Inc. Article holder and method of manufacture thereof. 4,341,300, Cl. 206-45.140.

Royal Hinge & Die Co., Inc.: *See*—
Roy, Armand W., 4,341,300, Cl. 206-45.140.

Royer, Rene R.; and Buisson, Jean-Pierre, to Agence Nationale de Valorisation de la Recherche. 2-Nitronaphtofuran derivatives and use as cell growth regulators. 4,341,794, Cl. 424-285.000.

Rubin, Barry P., to Pako Corporation. Photographic film type sensor. 4,341,453, Cl. 354-298.000.

Rubin, Mae K.: *See*—
Plank, Charles J.; Rosinski, Edward J.; and Rubin, Mae K., 4,341,748, Cl. 423-328.000.

Ruble, Charles H.: *See*—
Johnson, Johnny L., 4,341,164, Cl. 108-67.000.

Rudish, Ronald M.; and McVeigh, Peter J., to Eaton Corporation. High accuracy phase shift control system. 4,341,999, Cl. 328-155.000.

Ruffing, Sharon L.; Burg, Wallace E.; and Mikhail, Ezzat A., to Minnesota Mining and Manufacturing Co. 4-Alkylthio-2-trifluoromethylalkanesulfonanilides and derivatives thereof. 4,341,901, Cl. 564-99.000.

Ruhenstroth-Bauer, Gerhard; Goldberg, Michel; Silz, Siegfried; and Strecker, Wolfgang, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften E.V. Drug for enhancing liver growth and method of preparing same. 4,341,765, Cl. 424-101.000.

Ruie, Charles E., to SCM Corporation. Fluid non-dairy creamer. 4,341,811, Cl. 426-602.000.

Rusch, Reinhart: *See*—
Kruger, Hans-Rudolf; Arndt, Friedrich; Baumert, Dietrich; and Rusch, Reinhart, 4,341,551, Cl. 71-90.000.

Russell, Robert J. Automatic draft controller. 4,341,344, Cl. 236-45.000.

Russell, Stephen R.: *See*—
Lahti, Abbott W.; and Russell, Stephen R., 4,341,982, Cl. 318-51.000.

Rustin, Francis; and Keller, Morris C. Animal watering apparatus. 4,341,182, Cl. 119-75.000.

Ryan, John E., to Autopost International, Inc. Guidepost for parking vehicles. 4,341,488, Cl. 404-10.000.

S-B Manufacturing Co., Ltd.: *See*—
Schulz, Donald A., 4,341,042, Cl. 49-404.000.

S. C. Johnson & Son, Inc.: *See*—
DeVittorio, Joseph M., 4,341,347, Cl. 239-3.000.

Saari, Veikko R., to Bell Telephone Laboratories, Incorporated. Operational amplifier with increased settling speed. 4,342,003, Cl. 330-253.000.

Safrit, Sam C.; Farrell, Roscoe M.; and Shields, Harper, to Kayser-Roth Hosiery, Inc. Sock with triple layer fabric in foot and method. 4,341,096, Cl. 66-185.000.

Safrit, Sam C.: *See*—
Cassidy, Edward L., Sr.; Cothran, William B.; and Safrit, Sam C., 4,341,097, Cl. 66-187.000.

Sager, Gordon S.; and Sutton, Arthur J., to International Business Machines Corporation. Main storage validation means. 4,342,084, Cl. 364-200.000.

Saif, Linda J.: *See*—
Wyatt, Richard G.; James, Walter D.; Bohl, Edward H.; Theil, Kenneth W.; Saif, Linda J.; Kalica, Anthony R.; Greenberg, Harry B.; Kapikian, Albert Z.; and Chanock, Robert M., 4,341,870, Cl. 435-237.000.

St. Denis, Joseph F. Method for grinding thread cutting tools. 4,341,047, Cl. 51-288.000.

St. John, Eric P. Energy conserving heating and cooling system for printing plant. 4,341,167, Cl. 110-235.000.

St. John, Michael R., to Institute of Gas Technology. Hydrogen production by biomass product depolarized water electrolysis. 4,341,608, Cl. 204-129.000.

Saito, Masumi; Hirai, Eiichi; Endo, Masao; and Nishino, Toru, to Kurashiki Boseki Kabushiki Kaisha. Waterproof gypsum molded product. 4,341,560, Cl. 106-87.000.

Sakaguchi, Haruo: *See*—
Seki, Norio; Yatsuzuka, Yohtaro; and Sakaguchi, Haruo, 4,341,438, Cl. 350-96.160.

Sakai, Shinji; Shinoda, Nobuhiko; Kinoshita, Takao; Kawabata, Takashi; Kitagishi, Nozomu; Hosoe, Kazuya; and Ito, Tadashi, to Canon Kabushiki Kaisha. Focus detecting system. 4,341,953, Cl. 250-204.000.

Sakakibara, Kyoichi; Manita, Hideaki; Gondo, Masaaki; and Yamashita, Haruo, to Teikoku Hormone Mfg. Co., Ltd. Immunochemical assay reagent for the determination of haptens, and assay method therewith. 4,341,758, Cl. 424-12.000.

Sakamoto, Kunji, to Matsushita Seiko Co., Ltd. Electric fan. 4,341,151, Cl. 98-94.00R.

Sakamoto, Masaaki, to Kabushiki Kaisha Komatsu Seisakusho. Control system for a hydraulically driven vehicle. 4,341,133, Cl. 74-733.000.

Sakata, Kazuhiro: *See*—
Kuzunuki, Soshiro; Hirasawa, Kotaro; Imai, Masumi; Yuminaka, Takeo; Sakata, Kazuhiro; and Yoneda, Kanji, 4,341,287, Cl. 187-29.00R.

Sakata, Masato: *See*—
Ishibachi, Toyoaki; and Sakata, Masato, 4,341,260, Cl. 164-463.000.

Sakaue, Masahiro: *See*—
Mizushima, Yoshihiko; Takeda, Akitsu; Komiya, Kazumi; Sakaue, Masahiro; Ogino, Toshio; Itoh, Hideo; and Oka, Masayoshi, 4,341,954, Cl. 250-211.00J.

Sakaue, Tatsuo: *See*—
Iida, Tetsuya; and Sakaue, Tatsuo, 4,342,004, Cl. 330-253.000.

Sako, Susumu: *See*—
Maruko, Yutaka; Sako, Susumu; and Kobayashi, Tamotu, 4,341,973, Cl. 310-268.000.

Sakoda, Yasuhiro, to Sharp Kabushiki Kaisha. Door latching assembly. 4,341,409, Cl. 292-254.000.

Sakuyama, Masaki: *See*—
Oishi, Norio; Okamoto, Kouichi; Furukado, Shoji; and Sakuyama, Masaki, 4,341,093, Cl. 62-505.000.

Saladin, Josef, to Burgel AG. Apparatus for driving a rigid body for the purposes of producing a tumbling movement during rotation of the body. 4,341,475, Cl. 366-211.000.

Salladay, James O. Log-splitting attachment device. 4,341,246, Cl. 144-193.00A.

Salley, Howard W.: *See*—
Rotondi, Frank A.; and Salley, Howard W., 4,340,989, Cl. 15-249.000.

Saltz, Ivan K.: *See*—
Drbal, Vladimir J.; Ginsberg, Guenter; Hodgins, Bruce J.; Richardson, John A.; Britton, Ted W.; Grimm, Richard M.; Bello, Ernesto; Rodriguez, Rodolfo R.; and Saltz, Ivan K., 4,341,736, Cl. 422-100.000.

Sammells, Anthony F., to Institute of Gas Technology. Electrochemical zinc-oxygen cell. 4,341,847, Cl. 429-27.000.

Sanada, Kokichi, to Fuji Seiko Kabushiki Kaisha. Typewriter ribbon cartridge actuating device for portable typewriter. 4,341,479, Cl. 400-208.000.

Sand and Sea Industries, Inc.: *See*—
Uhlinger, Robert A., 4,341,629, Cl. 210-128.000.

Sandberg, Karen R.: *See*—
Turbak, Albin F.; Snyder, Fred W.; and Sandberg, Karen R., 4,341,807, Cl. 426-570.000.

Sandberg, Torvald; and Forsberg, Stig, to Elmekano i Lulea AB. Device for phase compensation and excitation of an asynchronous machine operating as a generator. 4,341,989, Cl. 322-95.000.

Sandoz Ltd.: *See*—
Matzinger, Peter, 4,341,700, Cl. 260-157.000.

Sanford Research Company: *See*—
Wollensak, Daniel W., 4,341,481, Cl. 401-251.000.
Wollensak, Daniel W., 4,341,482, Cl. 401-251.000.

Sangiovanni, Joseph J.; and Michaud, Raymond J., to United Technologies Corporation. Ballistically controlled nonpolar droplet dispensing method and apparatus. 4,341,310, Cl. 209-638.000.

Sankyo Company Limited: *See*—
Kurihara, Kozo; Fukazawa, Toshio; Ichikawa, Izuo; Ikegami, Yoshihiko; Fukiyama, Naohiko; and Ikeda, Masaru, 4,341,563, Cl. 106-171.000.

Santora, Scott A., to Waste Conversion Technology, Inc. Wastewater treatment. 4,341,639, Cl. 210-673.000.

Santoro, Arnold D. Detachable zero-set scope mount for hand guns and other firearms. 4,341,022, Cl. 33-245.000.

Sarsten, Jan A.; Heinzelmann, Fred J.; and Cataneo, Ferdinand C., to Exxon Research & Engineering Co. Removal of degradation product from gas treating solution. 4,341,746, Cl. 423-228.000.

Sartorio, Emanuele: *See*—
Calcagno, Benedetto; Sartorio, Emanuele; Divo, Claudio; and Verde, Luigi, 4,341,913, Cl. 585-449.000.

Sartorius GmbH: *See*—
Stadler, Eberhard; and Melcher, Franz-Josef, 4,341,275, Cl. 177-212.000.

Sassiver, Martin L.; and Boothe, James H., to American Cyanamid Company. 6-[D-α-(Coumarin-3-carboxamido)arylacetamido]-penicillanic acids or salts. 4,341,703, Cl. 260-239.100.

Sasson, Joel: *See*—
Bloch, Moshe R.; Sasson, Joel; Ginzburg, Margaret E.; Goldman, Zvi; Ginzburg, Ben Z.; Garti, Nissim; and Porath, Asher, 4,341,038, Cl. 47-1.400.

Sato, Hideo: *See*—
Horie, Seiji; and Sato, Hideo, 4,341,853, Cl. 430-83.000.
Inukai, Takashi; Furukawa, Kenji; Sugimori, Shigeru; and Sato, Hideo, 4,341,653, Cl. 252-299.630.

Sato, Hiroshi, to Daiichi Electric Co. Ltd. Multifarious boring device. 4,342,088, Cl. 364-474.000.

Sato, Kozo: *See*—
Igarashi, Akira; Sato, Kozo; and Iwakura, Ken, 4,341,403, Cl. 282-27.500.

Sato, Masanobu; and Fukuoka, Norio, to Olympus Optical Company, Ltd. Remotely controllable voice-operated starter for tape recorder. 4,342,106, Cl. 369-7.000.

Sato, Yukihiro: *See*—
Matsuyama, Shigeru; Koyama, Masaharu; and Sato, Yukihiro, 4,341,445, Cl. 350-344.000.
Sauder, Walter J. Body cell therapeutic device. 4,341,380, Cl. 272-65.000.
Sauer, Donald J., to RCA Corporation. Differential amplifier having a low-pass characteristic. 4,342,001, Cl. 330-9.000.
Sauer, Gunther: *See*—
Derleth, Helmut; Bretz, Karl-Heinz; and Sauer, Gunther, 4,341,663, Cl. 252-463.000.
Savin Corporation: *See*—
Mooney, John B.; and Brodie, Ivor, 4,341,851, Cl. 430-56.000.
Sberze, Piero: *See*—
Doria, Gianfederico; Romeo, Ciriaco; Sberze, Piero; Tibolla, Marcellino; and Corno, Maria L., 4,341,780, Cl. 424-248.550.
Scarella, Robert A.: *See*—
Prasad, Ravi; Gottesman, Martin; and Scarella, Robert A., 4,341,804, Cl. 426-387.000.
Schaar, Charles H., to Kendall Company, The. Adhesive bandage with foam backing. 4,341,209, Cl. 128-156.000.
Schaefer, James R.; and Radtke, Leland J., to United Technologies Corporation. Flow divider for liquid coolant or lubricant. 4,341,296, Cl. 192-113.00B.
Schafer, Helmut; and Unger, Manfred, to Hoechst Aktiengesellschaft. Forgery-resistant film. 4,341,833, Cl. 428-212.000.
Schaller, Maurice; Debs, Victor; Abate, Leo; Dodich, James; Rodriguez, Regino; and Anderle, Joseph A., to Levolor Lorentzen, Inc. Frame for a venetian blind. 4,341,254, Cl. 160-172.000.
Schaller, Ronald W., to Seltrust Engineering Limited. Position or movement sensor, e.g. for conveyances such as lifts. 4,342,021, Cl. 340-38.00L.
Schamberger, Jorg: *See*—
Zimmermann, Heinrich; and Schamberger, Jorg, 4,342,107, Cl. 369-172.000.
Scheckel, Sara E.: *See*—
Hiott, Edward R.; and Scheckel, Sara E., 4,341,356, Cl. 241-169.200.
Schedele, Helmut, to Siemens Aktiengesellschaft. Electromagnetic relay with a flat armature. 4,342,019, Cl. 337-274.000.
Scheindlin, Stanley, to Lemmon Company. Topical use of dyphylline and dyphylline containing compositions. 4,341,783, Cl. 424-253.000.
Scheingold, William S.: *See*—
Bright, Edward J.; Engle, Glenn A.; and Scheingold, William S., 4,341,429, Cl. 339-74.00R.
Cherian, Gabriel B.; Scheingold, William S.; and Youngfleish, Frank C., 4,341,433, Cl. 339-176.0MP.
Schelhas, Peter: *See*—
Knapp, Heinrich; Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; Jaggle, Gunther; and Schelhas, Peter, 4,341,192, Cl. 123-452.000.
Schenk, Doris. Decorative canopy means for toilet tissue roll mounting. 4,341,252, Cl. 160-45.000.
Schepers, Herman A. J., to Stamicarbon, B.V. Polymer composition. 4,341,884, Cl. 525-211.000.
Schepers, Herman A. J., to Stamicarbon, B.V. Polymer composition. 4,341,885, Cl. 525-211.000.
Schering AG: *See*—
Bolze, Manfred; and Drawert, Manfred, 4,341,671, Cl. 528-324.000.
Kruger, Hans-Rudolf; Arndt, Friedrich; Baumert, Dietrich; and Rusch, Reinhart, 4,341,551, Cl. 71-90.000.
Scheurecker, Werner; Wirth, Josef; and Angerer, Reinhold, to Voest-Alpine Aktiengesellschaft. Arrangement for locating rollers with an increased rotatory resistance in a roller way. 4,341,257, Cl. 164-150.000.
Schick, George L.: *See*—
Gordon, Donald J.; Johnson, Frank H.; Schick, George L.; and Smart, J. David, 4,341,393, Cl. 280-47.260.
Schiffman, Louis. Corrosion inhibitive pigment. 4,341,564, Cl. 106-302.000.
Schillerstrom, Merle S.: *See*—
Gold, Raymond D.; Tufts, Robert A.; and Schillerstrom, Merle S., 4,341,311, Cl. 209-644.000.
Schley, Ronald F.: *See*—
Palermiti, Frank M.; and Schley, Ronald F., 4,342,043, Cl. 346-163.000.
Schmid, Franz J., to Sistig Corporation. Method and apparatus for controlling tension in a moving material. 4,341,335, Cl. 226-195.000.
Schmidt, Paul J.; and Hung, William M. W., to Sterling Drug Inc. Systems employing indole color formers. 4,341,402, Cl. 282-27.500.
Schneider, Gottfried; Wagner, Kuno; and Muller, Hanns P., to Bayer Aktiengesellschaft. Preparation of low molecular weight polyhydroxyl compounds. 4,341,909, Cl. 568-863.000.
Schneider, Phillip M.: *See*—
Wallace, Donald G.; Schneider, Phillip M.; and Lundblad, John L., 4,341,764, Cl. 424-101.000.
Schneider, Timothy L.: *See*—
Rackley, Darwin P.; Schneider, Timothy L.; and Woodward, Milton H., 4,342,052, Cl. 358-287.000.
Schnellmann, Danielle: *See*—
Briffod, Jean-Paul; Martin, Roland; Pfau, Jean; Bommeli, Bernard; and Schnellmann, Danielle, 4,341,939, Cl. 219-69.00W.
Schobl Enterprises: *See*—
Schobl, Howard T., 4,341,118, Cl. 116-221.000.
Schobl, Howard T., to Schobl Enterprises. Temperature verification apparatus. 4,341,118, Cl. 116-221.000.
Scholer, Arno. Holder for small instruments such as dental instruments. 4,341,312, Cl. 211-60.00T.
Scholz, John A.; and English, George J., to GTE Products Corporation. Subminiature photoflash lamp having light-emitting pyrotechnic charge. 4,341,513, Cl. 431-362.000.
Schreffler, Dean A.; and Noonan, Charles M., to Polymer Corporation, The. Epoxy coating powders with wrinkle finishes. 4,341,819, Cl. 427-195.000.
Schreyer, Gerd: *See*—
Hofen, Willi; Klenk, Herbert; Schreyer, Gerd; Weiberg, Otto; Waldmann, Helmut; Seifert, Hermann; Reissinger, Karl-Hermann; and Swodenk, Wolfgang, 4,341,709, Cl. 549-272.000.
Schroeder, James C., to Manitowoc Company, Inc., The. Cable drum rotation indicator. 4,342,028, Cl. 340-407.000.
Schromm, Kurt: *See*—
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; Hoefke, Wolfgang; Gaida, Wolfram; Streller, Ilse; and Fugner, Armin, 4,341,778, Cl. 424-248.500.
Schulte-Elte, Karl-Heinrich; Hauser, Arnold; and Ohloff, Gunther, to Firmenich SA. Pyranic derivatives for use in the preparation of muscone. 4,341,897, Cl. 549-355.000.
Schulte, Klaus: *See*—
Kreuer, Karl D.; and Schulte, Klaus, 4,341,876, Cl. 521-170.000.
Schultz, Erhard, to Tondeo-Werk GmbH. Container for storing shaving blade units. 4,341,305, Cl. 206-350.000.
Schulz, Donald A., to S-B Manufacturing Co., Ltd. Sliding door spacer. 4,341,042, Cl. 49-404.000.
Schumacher, John C. Energy efficient process for continuous production of thin semiconductor films on metallic substrates. 4,341,610, Cl. 204-206.000.
Schurmeyer, Paul: *See*—
Warncke, Heinz; Kahl, Melchior; Meyer, Hans H.; and Schurmeyer, Paul, 4,341,108, Cl. 73-23.000.
Schwarz, Karl E. Garment bag bottom sealing machine for the garment manufacturing and dry cleaning industries. 4,341,583, Cl. 156-359.000.
SCM Corporation: *See*—
Croyle, Barbara A., 4,341,808, Cl. 426-573.000.
Rule, Charles E., 4,341,811, Cl. 426-602.000.
Scott, William G.; and Luh, Howard H., to Ford Aerospace & Communications Corporation. Multiple frequency band, multiple beam microwave antenna system. 4,342,036, Cl. 343-836.000.
Scotten, Lawrence N.: *See*—
Brownlee, Richard T.; Scotten, Lawrence N.; and Walker, David K., 4,340,977, Cl. 3-1.500.
Scudder, Roy, to FMC Corporation. Coffee harvester. 4,341,062, Cl. 56-330.000.
Seabold, Thomas W.; Patterson, Richard A.; and de Neui, Richard P., to Minnesota Mining and Manufacturing Company. Devices for imparting curl to tapes. 4,341,585, Cl. 156-443.000.
Sebel, Harry. Stackable chair with arm rests. 4,341,419, Cl. 297-239.000.
Seelinger, John A., to Anderson Engineers, Inc. Water table with low profile conveyor system. 4,341,374, Cl. 266-49.000.
Seidl, Jiri: *See*—
Mayr, Bertold; and Seidl, Jiri, 4,341,186, Cl. 123-52.00M.
Seidl, Loren R., to United States of America, Air Force. Multi-tone jammer. 4,342,119, Cl. 455-1.000.
Seifert, Hermann: *See*—
Hofen, Willi; Klenk, Herbert; Schreyer, Gerd; Weiberg, Otto; Waldmann, Helmut; Seifert, Hermann; Reissinger, Karl-Hermann; and Swodenk, Wolfgang, 4,341,709, Cl. 549-272.000.
Seifried, Paul E., to American Cyanamid Company. Sample carrier material handling apparatus. 4,341,735, Cl. 422-66.000.
Seki, Norio; Yatsuzuka, Yohtaro; and Sakaguchi, Haruo, to Kokusai Denshin Denwa Co., Ltd. Light source arrangement in an optical communication system. 4,341,438, Cl. 350-96.160.
Sekmakas, Kazys; Shah, Raj; and Parenti, Aurelio J., to De Soto, Inc. Mannich base copolymers. 4,341,681, Cl. 524-555.000.
Seltrust Engineering Limited: *See*—
Schaller, Ronald W., 4,342,021, Cl. 340-38.00L.
Senaha, Susumu: *See*—
Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,341,841, Cl. 428-414.000.
Senior, Robert B.: *See*—
Loy, Fred W.; and Senior, Robert B., 4,341,014, Cl. 29-857.000.
Sera, Hidefumi: *See*—
Toyama, Tadao; Nakao, Sho; Shiba, Keisuke; Sera, Hidefumi; and Ogawa, Masasi, 4,341,856, Cl. 430-156.000.
Settlemire, David J.; Ide, John D.; and Novo, Mario C., to Bendix Corporation, The. Squelch system for use in a multiple carrier AM communications systems receiver. 4,342,120, Cl. 455-222.000.
Sexton, Richard W.; and Goddard, David M., to Material Concepts, Inc. Method of fabricating a fiber reinforced metal composite. 4,341,823, Cl. 427-404.000.
Seynhaeve, Andre G., to Societe Delsey. Object intended to be held in the hand, in particular a suitcase handle, and a process for manufacturing same. 4,340,990, Cl. 16-126.000.
Shaffer, John W.: *See*—
Tozier, John E.; and Shaffer, John W., 4,341,817, Cl. 427-54.100.
Shah, Dinubhai H.: *See*—
DeMarinis, Robert M.; and Shah, Dinubhai H., 4,341,786, Cl. 424-258.000.
Shah, Raj: *See*—
Sekmakas, Kazys; Shah, Raj; and Parenti, Aurelio J., 4,341,681, Cl. 524-555.000.

Shaikh, Humayun N., to Burke Mills, Inc. Yarn carrier for pressure kier. 4,341,361, Cl. 245-130.400.

Shames, Harold: *See*—
Shames, Sidney J.; and Shames, Harold, 4,340,988, Cl. 15-104.3SN.

Shames, Sidney J.; and Shames, Harold. Canister auger. 4,340,988, Cl. 15-104.3SN.

Shank, Joseph L., to Dynagel Incorporated. Gelled gelatin food product prepared from non-gelled aqueous gelatin compositions. 4,341,810, Cl. 426-576.000.

Shanks, Douglas G. Standoff for two component lining and method of installation. 4,341,514, Cl. 432-3.000.

Shanks, Ian A., to National Research Development Corporation. Analogue displays for electronic timepieces or meters. 4,342,030, Cl. 340-753.000.

Sharbaugh, John E.; and Kazan, Joseph M., to Westinghouse Electric Corp. Nuclear reactor dip seal. 4,341,732, Cl. 376-206.000.

Sharma, Harish C.: *See*—
Whitehouse, David J.; and Sharma, Harish C., 4,342,091, Cl. 364-506.000.

Sharp Kabushiki Kaisha: *See*—
Sakoda, Yasuhiro, 4,341,409, Cl. 292-254.000.

Shaw, Michael J.; and Thiessen, Robert J., to Allied Paper Incorporated. Water and solvent resistant coated paper and method for making the same. 4,341,839, Cl. 428-342.000.

Shaw, Robert G., to Commonwealth Industrial Gases Limited, The. Method for refrigeration. 4,341,080, Cl. 62-64.000.

Shealy, James P., Jr.: *See*—
Barnett, Gary A.; and Shealy, James P., Jr., 4,341,832, Cl. 428-196.000.

Shell Oil Company: *See*—
Walker, Bruce H.; and Feenstra, Robijn, 4,341,273, Cl. 175-339.000.

Shen, David Y. H.: *See*—
Rodgers, Douglas N.; Siegler, Manfred; and Shen, David Y. H., 4,341,124, Cl. 73-863.010.

Shepard, Joseph F.: *See*—
Bartholomew, Robert F.; Garbarino, Paul L.; Gardiner, James R.; Revitz, Martin; and Shepard, Joseph F., 4,341,009, Cl. 29-571.000.

Shepherd, Michael; and Bremer, Robert C., Jr., to Wallace Murray Corporation. Dust and oil slinger. 4,341,130, Cl. 74-574.000.

Shiba, Keisuke: *See*—
Toyama, Tadao; Nakao, Sho; Shiba, Keisuke; Sera, Hidefumi; and Ogawa, Masasi, 4,341,856, Cl. 430-156.000.

Shields, Harper: *See*—
Safrit, Sam C.; Farrell, Roscoe M.; and Shields, Harper, 4,341,096, Cl. 66-185.000.

Shigoku, Masaharu, to Minolta Camera Kabushiki Kaisha. Selectively lockable camera exposure factor setting mechanism. 4,341,450, Cl. 354-273.000.

Shih, David H., to Merck & Co., Inc. Thienamycin derivatives. 4,341,705, Cl. 260-245.20T.

Shih, David H.: *See*—
Christensen, Burton G.; and Shih, David H., 4,341,706, Cl. 260-245.20T.
Christensen, Burton G.; and Shih, David H., 4,341,791, Cl. 424-274.000.

Shima, Shunsuke: *See*—
Marumoto, Ryuji; Shima, Shunsuke; and Tanabe, Masao, 4,341,769, Cl. 424-180.000.

Shimanuki, Masanobu: *See*—
Ishii, Shouichi; Shimanuki, Masanobu; and Morizono, Akira, 4,342,056, Cl. 360-72.100.

Shimbo, Masaru: *See*—
Noguchi, Mikio; Kobayashi, Kazuho; Takenaka, Shigeo; and Shimbo, Masaru, 4,341,980, Cl. 315-169.100.

Shimomura, Susumu: *See*—
Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,341,841, Cl. 428-414.000.

Shindo, Minoru: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,341,776, Cl. 424-246.000.

Shinn, Thomas W.: *See*—
Leitch, Paul A.; and Shinn, Thomas W., 4,341,137, Cl. 83-639.000.

Shinnar, Reuel: *See*—
Bell, Weldon K.; Chang, Clarence D.; and Shinnar, Reuel, 4,341,069, Cl. 60-39.020.

Shinoda, Nobuhiko: *See*—
Sakai, Shinji; Shinoda, Nobuhiko; Kinoshita, Takao; Kawabata, Takashi; Kitagishi, Nozomu; Hosoe, Kazuya; and Ito, Tadashi, 4,341,953, Cl. 250-204.000.

Shinoi, Tsuyoshi; and Hamatani, Fumikazu, to TIE/Communications, Inc.; and Nippon Tsushin Kogyo K.K. Data transmission apparatus. 4,341,927, Cl. 179-2.0DP.

Shinozaki, Teizo: *See*—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,341,776, Cl. 424-246.000.

Shionogi & Co., Ltd.: *See*—
Hirai, Kentaro; Matsutani, Shigeru; Ishiba, Teruyuki; and Makino, Itsuo, 4,341,704, Cl. 260-243.300.

Shionozaki, Yoshio: *See*—
Takei, Katsumori; Kanbe, Sadao; and Shionozaki, Yoshio, 4,341,652, Cl. 252-299.500.

Shirai, Masanari: *See*—
Kashiwagi, Kazuo; Arai, Toshio; Toda, Takao; Shirai, Masanari; and Yanagi, Masaaki, 4,341,463, Cl. 355-14.0CH.

Shoji, Shigemasa, to TDK Electronics Co., Ltd. Hub for magnetic tape. 4,341,358, Cl. 242-74.100.

Shortes, Samuel R.; and Penn, Thomas C., to Texas Instruments Incorporated. Method for removing photoresist layer from substrate by ozone treatment. 4,341,592, Cl. 156-643.000.

Shyers, Richard H. Container having interlocking base and closure. 4,341,307, Cl. 206-387.000.

Siahou, Joseph. Sound-producing toothbrush assembly. 4,341,230, Cl. 132-84.00B.

Sidler, Kurt, to Gottlieb Johner. Band saw. 4,341,138, Cl. 83-820.000.

Siebert, Louie P. System for applying ammonia to the ground. 4,341,168, Cl. 111-7.000.

Siegel, David B. Releasing and resetting mechanism for use in a rat trap. 4,341,033, Cl. 43-81.000.

Siegler, Manfred: *See*—
Rodgers, Douglas N.; Siegler, Manfred; and Shen, David Y. H., 4,341,124, Cl. 73-863.010.

Siemens Aktiengesellschaft: *See*—
Auinger, Herbert, 4,341,970, Cl. 310-184.000.
Grabmaier, Josef, 4,341,589, Cl. 156-606.000.
Haidinger, Erich, 4,341,013, Cl. 29-854.000.
Lauterbach, Richard; and Keller, Hartmut, 4,341,816, Cl. 427-34.000.
Roesch, Hansjoerg; and Eberle, Helmut, 4,342,032, Cl. 343-6.0ND.
Schedele, Helmut, 4,342,019, Cl. 337-274.000.
Utner, Ferdinand; Vetter, Harald; and Nutz, Ludwig, 4,342,020, Cl. 338-314.000.
Waerve, Hans, 4,341,279, Cl. 180-19.00S.

Siemens Medical Laboratories, Inc.: *See*—
Gibson, Robert, 4,342,060, Cl. 361-1.000.

Sievert, Dale W., to Honeywell Inc. Direct current motor with improved pole piece that reduces cogging. 4,341,969, Cl. 310-154.000.

SIG Societe Industrielle Suisse: *See*—
Nielsen, Arne, 4,341,160, Cl. 104-7.00B.

Sigisawa, Ko: *See*—
Koshida, Daikichi; Sigisawa, Ko; Majima, Junji; and Hattori, Ryuichi, 4,341,803, Cl. 426-242.000.

Signetics Corporation: *See*—
Puar, Deepraj S., 4,342,102, Cl. 365-207.000.

Silz, Siegfried: *See*—
Ruhenstroth-Bauer, Gerhard; Goldberg, Michel; Silz, Siegfried; and Strecker, Wolfgang, 4,341,765, Cl. 424-101.000.

Sim, William J.; and Marth, Ronald M. Building structure and process of beam assembly therein. 4,341,051, Cl. 52-702.000.

Simeth, Claus, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Vibration-absorbing cylinder for printing presses. 4,341,157, Cl. 101-375.000.

Simmons, Kate A.: *See*—
Gadsby, Bruce; and Simmons, Kate A., 4,341,806, Cl. 426-511.000.

Simpson, Damon G., to Raychem Corporation. Composite connector having heat shrinkable terminator. 4,341,921, Cl. 174-84.00R.

Simpson, Victor J., to Alcan Aluminium (U.K.) Ltd. Radiators for use in hot water central heating systems. 4,341,346, Cl. 237-70.000.

Singer Company, The: *See*—
Beckerman, Howard L.; and Pepe, Russell J., 4,341,170, Cl. 112-158.00E.
Johnson, Ralph E., 4,341,171, Cl. 112-250.000.

Singer, Reginald D.; Holden, Brian J.; and Hughes, John H., to Dunlop Limited. Method of and apparatus for impregnating fabric reinforcement structures with a liquid impregnant. 4,341,822, Cl. 427-389.900.

Singleton, Peter A., to Elliott Brothers Limited. Mirror mounting arrangement for a laser. 4,342,117, Cl. 372-107.000.

Sistig Corporation: *See*—
Schmid, Franz J., 4,341,335, Cl. 226-195.000.

Skeist, S. Merrill: *See*—
Gross, Leo; and Skeist, S. Merrill, 4,341,977, Cl. 313-485.000.
Gross, Leo; and Skeist, S. Merrill, 4,341,979, Cl. 315-57.000.

Skorianetz, Werner; and Ohloff, Gunther, to Firmenich SA. Perfuming with oxygen containing derivatives of tricyclo[6.2.1.0^{2,7}]undecane. 4,341,666, Cl. 252-522.00R.

Slater Steel Industries Ltd.: *See*—
Gordon, Donald J.; Johnson, Frank H.; Schick, George L.; and Smart, J. David, 4,341,393, Cl. 280-47.260.

Small, James E., to Emhart Industries, Inc. Voltage level detector for battery charger control circuit. 4,341,988, Cl. 320-31.000.

Smalley, Ned J., to Owens-Illinois, Inc. Closure with child-resistant tamper-proof band. 4,341,318, Cl. 215-225.000.

Smart, J. David: *See*—
Gordon, Donald J.; Johnson, Frank H.; Schick, George L.; and Smart, J. David, 4,341,393, Cl. 280-47.260.

Smead, Robert G.: *See*—
Bagby, Thomas L.; Demeny, Gary L.; and Smead, Robert G., 4,341,815, Cl. 427-33.000.

Smith, Gareth J. Dimpler attachment and improved fastener driving tool. 4,341,336, Cl. 227-66.000.

Smith, George W., to Lucas Industries Limited. Disc brakes. 4,341,289, Cl. 188-73.390.

Smith Kline & French Laboratories Limited: *See*—
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,341,787, Cl. 424-270.000.

Smith, Peter B. Removing and collecting oil. 4,341,637, Cl. 210-662.000.
Smith, Ronald W. Cabinet. 4,341,040, Cl. 47-73.000.
Smith, William C.: *See—*
Loth, John L.; Smith, William C.; and Friggens, Gary R., 4,341,530, Cl. 48-73.000.
SmithKline Corporation: *See—*
DeMarinis, Robert M.; and Shah, Dinubhai H., 4,341,786, Cl. 424-258.000.
SmithKline-Rit: *See—*
Zygraich, Nathan, 4,341,763, Cl. 424-89.000.
Snary, David, to Burroughs Wellcome Co. Antigenic material. 4,341,697, Cl. 260-112.00R.
Snelgrove, James A., to Monsanto Company. Printing ink formulations. 4,341,683, Cl. 524-503.000.
Snyder, Fred W.: *See—*
Turbak, Albin F.; Snyder, Fred W.; and Sandberg, Karen R., 4,341,807, Cl. 426-570.000.
Societe Anonyme dite: Delle-Alsthom: *See—*
Thuries, Edmond; and Masson, Jean-Paul, 4,342,067, Cl. 361-333.000.
Societe Anonyme dite: Les Cables de Lyon: *See—*
Trezeguet, Jean-Pierre; Vives, Jean-Patrick; and Comte, Georges, 4,341,440, Cl. 350-96.230.
Societe Delsey: *See—*
Seynhaeve, Andre G., 4,340,990, Cl. 16-126.000.
Societe d'Etudes de Machines Thermiques S.E.M.T.: *See—*
Pollet, Jean-Pierre, 4,341,185, Cl. 123-41.850.
Societe Francaise D'Electrometallurgie-Sofrem: *See—*
Daire, Marc; Larrere, Yves; and Mangin, Andre, 4,341,533, Cl. 51-309.000.
Sockell, Edward J.: *See—*
Wu, Hsin-Chih; and Sockell, Edward J., 4,341,535, Cl. 55-85.000.
Sofrance S.A.: *See—*
Tardy, Roger, 4,341,125, Cl. 73-863.250.
Solenberger, John C.; and Withers, Michael S., to Du Pont de Nemours, E. I., and Company. Process for cation permeable membrane with reinforcement fabric embedded therein and product thereof. 4,341,605, Cl. 204-98.000.
Solenthaler, Karl, to Gebrueder Buehler AG. Contrivance for shelling a granular product. 4,341,152, Cl. 99-609.000.
Sollich, Helmut, to SOLLICH KG Spezialmaschinenfabrik. Apparatus for treating materials containing cocoa butter. 4,341,476, Cl. 366-293.000.
SOLLICH KG Spezialmaschinenfabrik: *See—*
Sollich, Helmut, 4,341,476, Cl. 366-293.000.
Solomon, Laura B. Psychotherapeutic device. 4,341,521, Cl. 434-236.000.
Sony Corporation: *See—*
Inatome, Kiyoshi, 4,341,363, Cl. 242-189.000.
Sood, Prem L.: *See—*
Stewart, Charles G.; and Sood, Prem L., 4,342,079, Cl. 364-200.000.
Sorrells, Frank D., to Cole National Corporation. Adapter chuck for mounting lens blanks. 4,341,045, Cl. 51-216.0LP.
Southerlin, William F.; and Eschenbach, Paul W., to Milliken Research Corporation. Air textured yarns. 4,341,063, Cl. 57-6.000.
Sovak, Milos; and Ranganathan, Ramachandran, to University of California, The Regents of the. Novel amino-dioxepane intermediates for the synthesis of new non-ionic contrast media. 4,341,756, Cl. 424-5.000.
Spallholz, Julian E., to Nutrition 21. Stable isotopic immunoassay method employing non-radioactive selenium label. 4,341,757, Cl. 424-8.000.
Spalti, Max; and Vanek, Vladimir, to SSIG Equipment S.A. Arrangement for determining the position, especially the angular position, of a movable body. 4,342,025, Cl. 340-347.00P.
Sparkes, Charles J.: *See—*
Kracklauer, John J.; and Sparkes, Charles J., 4,341,881, Cl. 524-176.000.
Spaziante, Placido M.: *See—*
DeNora, Oronzio; and Spaziante, Placido M., 4,341,604, Cl. 204-98.000.
Specht, Donald P.: *See—*
Regan, Michael T.; Reynolds, George A.; Specht, Donald P.; and VanAllan, James A., 4,341,894, Cl. 544-333.000.
Spencer, William R.; and Freberg, Dana D., to General Electric Company. Adjustable connecting apparatus. 4,341,483, Cl. 403-4.000.
Sperry Corporation: *See—*
Chi, Chad S.; and Craig, John W., 4,341,964, Cl. 307-517.000.
McDevitt, Bernard J., 4,342,096, Cl. 364-900.000.
Nelson, Gary L.; and Harvey, William A., 4,341,590, Cl. 156-624.000.
Spivey, William J., Jr., to Caterpillar Tractor Co. Control circuit for variable displacement pumps with override valve. 4,341,073, Cl. 60-399.000.
SSIG Equipment S.A.: *See—*
Spalti, Max; and Vanek, Vladimir, 4,342,025, Cl. 340-347.00P.
Staats, James E., to General Electric Company. Microwave oven cooking progress indicator. 4,341,937, Cl. 219-10.55M.
Stackpole Components Company: *See—*
Josemans, Leo J. M., 4,341,935, Cl. 200-252.000.
Stadler, Eberhard; and Melcher, Franz-Josef, to Sartorius GmbH. Measuring apparatus with electromagnetic force compensation and capacitive position sensor. 4,341,275, Cl. 177-212.000.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Hoefke, Wolfgang; and Pichler, Ludwig, to C. H. Boehringer Sohn. 2-(2-Chloro-4-cyclopropyl-phenyl-imino)-imidazolidine, and acid addition salts thereof as bradycardiacs. 4,341,788, Cl. 424-273.00R.
Stamicarbon, B.V.: *See—*
Schepers, Herman A. J., 4,341,884, Cl. 525-211.000.
Schepers, Herman A. J., 4,341,885, Cl. 525-211.000.
Stanadyne, Inc.: *See—*
DeLuca, Frank, 4,341,351, Cl. 239-453.000.
Stancliffe, A. Colin: *See—*
MacKnight, Allen K.; and Stancliffe, A. Colin, 4,342,116, Cl. 372-89.000.
Standard Oil Company, The: *See—*
Callahan, James L.; Hardman, Harley F.; and Milberger, Ernest C., 4,341,717, Cl. 260-465.300.
Eskamani, Abolghassem; and Dernar, Helen D., 4,341,609, Cl. 204-132.000.
Kiikka, Oliver A.; and Connors, Keith A., 4,341,751, Cl. 423-461.000.
Landis, Norris J., 4,341,640, Cl. 210-752.000.
Wu, Hsin-Chih; and Sockell, Edward J., 4,341,535, Cl. 55-85.000.
Standard Oil Company (Indiana): *See—*
Bertolacini, Ralph J.; and Forsythe, William L., Jr., 4,341,623, Cl. 208-113.000.
Bertolacini, Ralph J.; and Forsythe, William L., Jr., 4,341,660, Cl. 252-455.00Z.
Stanson, Mark V.; and Riley, Garth I., to Northern Telecom Limited. Ringing signal supply. 4,341,928, Cl. 179-51.0AA.
Starace, Jeremia P., to Bell Telephone Laboratories, Incorporated. Adjustable cable clamp. 4,340,996, Cl. 24-20.00R.
Staron, John C., to Bendix Corporation, The. Chuck assembly and collet. 4,341,006, Cl. 29-434.000.
Stauffer Chemical Company: *See—*
Brison, Robert J.; and Webber, Michael E., 4,341,744, Cl. 423-206.00T.
Jung, Alfred K.; Turczyk, Michael; and Weil, Edward D., 4,341,692, Cl. 524-263.000.
Large, George B.; and Buren, Lawrence L., 4,341,549, Cl. 71-86.000.
Pallos, Ferenc M.; Brokke, Mervin E.; and Arneklev, Duane R., 4,341,550, Cl. 71-88.000.
Tilles, Harry, 4,341,702, Cl. 260-239.0BF.
Stauffer, Howard V., to Valmont Industries, Inc. Apparatus and method for reducing the waste of welding gas. 4,341,237, Cl. 137-382.500.
Steer, Peter L.; and Mathews, Howard, to Kingsdown Medical Consultants Limited. Wound dressing. 4,341,207, Cl. 128-155.000.
Steetley Engineering Limited: *See—*
Bloomfield, Dennis G., 4,341,041, Cl. 49-141.000.
Steffan, Guido: *See—*
Vogel, Axel; Steffan, Guido; Mannes, Karl; and Trescher, Viktor, 4,341,720, Cl. 260-544.00Y.
Steffes, Helmut, to ITT Industries, Inc. Hydraulic brake booster. 4,341,076, Cl. 60-547.00R.
Steiner, Herbert; and Magg, Johann, to Bosch-Siemens Hausgerate GmbH. Electrical heating apparatus with a heating element of PTC material. 4,341,949, Cl. 219-553.000.
Steinle, Gunter; and Lassle, Edwin, to Dual Gebruder Steidinger GmbH & Co. Electrodynamic loudspeaker. 4,341,930, Cl. 179-115.50R.
Stelma, Gerard N., to Keeler Corporation. Electrically operated remote control rearview mirror. 4,341,444, Cl. 350-289.000.
Stephens, Charles E. Refinish painting apparatus. 4,341,828, Cl. 428-40.000.
Stepniak, Marek: *See—*
Cieslak, Jerzy; Busko-Oszczapowicz, Irena; and Stepniak, Marek, 4,341,779, Cl. 424-248.510.
Sterling Drug Inc.: *See—*
Clarke, Robert L., 4,341,895, Cl. 546-129.000.
Schmidt, Paul J.; and Hung, William M. W., 4,341,402, Cl. 282-27.500.
Sterling, Henley F., to ITT Industries, Inc. Semiconductor processing. 4,341,588, Cl. 156-601.000.
Stetka, Steven S.; and Nazario, Francisco N., to Exxon Research & Engineering Co. Process for the liquefaction of solid carbonaceous materials wherein nitrogen is separated from hydrogen via ammonia synthesis. 4,341,618, Cl. 208-8.0LE.
Stevens, Don L., Jr.; Brown, Steven L.; Malone, John A.; Knowles, Timothy A.; and Webb, Thomas G., to United States of America, Navy. Bow dock. 4,341,174, Cl. 114-45.000.
Stevens, Jerry D., to Gould Inc. Catheter flushing apparatus. 4,341,224, Cl. 128-675.000.
Stewart, Charles G.; and Sood, Prem L., to Northern Telecom Limited. Duplicated memory system having status indication. 4,342,079, Cl. 364-200.000.
Stewart, James F., to Pako Corporation. Exposure control for subtractive photographic printer. 4,341,465, Cl. 355-36.000.
Stewart, Myron C., to RCA Corporation. Carriage alignment apparatus for video disc player. 4,342,109, Cl. 369-249.000.
Stocker, Walbert A. Power drive for tree transplanting spoons. 4,341,025, Cl. 37-2.00R.
Stockman, Richard F., to Combustion Engineering, Inc. Method of charging heat pipe. 4,341,000, Cl. 29-157.30H.
Stodola, Kevin C., to Rockwell International Corporation. Error checking circuit. 4,342,112, Cl. 371-68.000.
Stodt, Enno, to Voith Getriebe KG. Multiple-speed transmission of countershaft construction which can be shifted under load. 4,341,127, Cl. 74-333.000.

Stokes, Clarence O., Jr.: *See*—
Marco, Francis W.; and Stokes, Clarence O., Jr., 4,341,669, Cl. 523-205.000.

Stolp, Klaus-Dieter; and Stute, Rolf W., to CPC International Inc. Process for obtaining corn oil from corn germ. 4,341,713, Cl. 260-412.200.

Strecker, Wolfgang: *See*—
Ruhenstroth-Bauer, Gerhard; Goldberg, Michel; Silz, Siegfried; and Strecker, Wolfgang, 4,341,765, Cl. 424-101.000.

Strege, Paul E., to Dow Chemical Company, The. Inorganic halide salt catalysts for hydroxyalkylation of phenols or thiophenols. 4,341,905, Cl. 568-45.000.

Streicher, Rudolf; and Pol, Manfred, to Vereinigte Metallwerke Ranshofen-Berndorf Aktiengesellschaft. Motor vehicle wheel. 4,341,425, Cl. 301-64.0SH.

Streller, Ilse: *See*—
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; Hoefke, Wolfgang; Gaida, Wolfram; Streller, Ilse; and Fugner, Armin, 4,341,778, Cl. 424-248.500.

Strimbeck, Davis & Soloway: *See*—
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Strong, David L.: *See*—
Brown, Paul J.; Dugan, Robert J.; Guyette, Richard R.; and Strong, David L., 4,342,082, Cl. 364-200.000.

Stull, Keefer S., Jr.: *See*—
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Sturkey, William C., to Gaston County Dyeing Machine Company. Method for wet processing of textile material in endless rope form. 4,340,986, Cl. 8-152.000.

Sturm, Karl; and Muschaweck, Roman, to Hoechst Aktiengesellschaft. 2,4-Diamino-5-sulfamoylbenzene sulfonic acids and process for their manufacture. 4,341,773, Cl. 424-229.000.

Stute, Rolf W.: *See*—
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Subera, Elmer J.: *See*—
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Suburban Tool, Inc.: *See*—
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Sugaya, Yoshio: *See*—
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Sugimori, Shigeru: *See*—
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Sugio, Akitoshi; Masu, Masanobu; Okabe, Masao; Matunaga, Masatugu; and Ishiyama, Kozo, to Mitsubishi Gas Chemical Company, Inc. Polyphenylene ether resin composition having improved heat stability and impact strength. 4,341,879, Cl. 524-91.000.

Sugioka, Masumi, to Asahi Malleable Iron Co. Ltd. Automatically meshing sheet winch. 4,341,372, Cl. 254-353.000.

Sugiura, Muneharu; Minoura, Kazuo; and Minami, Setsuo, to Canon Kabushiki Kaisha. Scanning projection apparatus. 4,341,459, Cl. 355-8.000.

Sugizawa, Taijiro: *See*—
Kikuchi, Noribumi; Suzuki, Yasuo; Sugizawa, Taijiro; and Washizu, Fumio, 4,341,834, Cl. 428-216.000.

Sullivan, Paul D. Wood burning stove. 4,341,198, Cl. 126-68.000.

Sumitomo Chemical Company, Limited: *See*—
Tezuka, Yasuo; Sunami, Masaki; Omura, Takashi; and Kayane, Yutaka, 4,341,699, Cl. 260-153.000.

Summach, Harley R. W. Supporting frame for detachably holding a bag type receptacle. 4,341,410, Cl. 294-1.00B.

Sunami, Masaki: *See*—
Tezuka, Yasuo; Sunami, Masaki; Omura, Takashi; and Kayane, Yutaka, 4,341,699, Cl. 260-153.000.

Sundstrand Corporation: *See*—
Pollman, Frederic W., 4,341,131, Cl. 74-687.000.

Sundstrom, Staffan; and Herlestam, Tore, to AB Leo. Apparatus with built-in heating device for disinfecting contact lenses. 4,341,948, Cl. 219-521.000.

Sutter, Franz: *See*—
Perrett, T. Robert; Sutter, Franz; and Gisin, Paul, 4,341,206, Cl. 128-92.0EB.

Sutton, Arthur J.: *See*—
Sager, Gordon S.; and Sutton, Arthur J., 4,342,084, Cl. 364-200.000.

Suzuki, Kazufumi; Kumagai, Shumi; Ochiai, Yuetsu; and Mizoguchi, Akira, to Matsushita Electric Industrial Company, Limited. Method of and system for reproducing or transmitting half-tone images. 4,342,051, Cl. 358-283.000.

Suzuki, Kohji: *See*—
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Suzuki, Motoaki: *See*—
Matsubara, Hiroyoshi; Takeshige, Kenji; Osuka, Tatsumi; Nagamine, Takashi; Hirano, Osamu; Tanaka, Jinkichi; Watanabe, Itaru; and Suzuki, Motoaki, 4,341,938, Cl. 219-61.000.

Suzuki, Sadao; Kinoshita, Harumi; Takada, Takuzo; and Negishi, Fumio, to Yoshino Kogyosho Co., Ltd. Biaxially oriented bottle of saturated polyester resin. 4,341,317, Cl. 215-31.000.

Suzuki, Takashi: *See*—
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Suzuki, Yasuo: *See*—
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Suzuki, Yoshiki: *See*—
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Swarofsky, Walter: *See*—
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Swartout, Bruce E., to U.S. Flywheels, Inc. Hub for use in flywheels for kinetic energy storage. 4,341,001, Cl. 29-159.300.

Swinehart, Carl F., to Harshaw Chemical Company, The. Getter for melt-grown scintillator ingot. 4,341,654, Cl. 252-301.40H.

Swiss Aluminium Ltd.: *See*—
Ritzl, Antal, 4,341,163, Cl. 105-377.000.

Swodenk, Wolfgang: *See*—
Hofen, Willi; Klenk, Herbert; Schreyer, Gerd; Weiberg, Otto; Waldmann, Helmut; Seifert, Hermann; Reissinger, Karl-Hermann; and Swodenk, Wolfgang, 4,341,709, Cl. 549-272.000.

SWS Incorporated: *See*—
Nilsen, Carl J., 4,341,943, Cl. 219-121.0LD.

Syntex Inc.: *See*—
Nestor, John J.; Jones, Gordon H.; and Vickery, Brian H., 4,341,767, Cl. 424-177.000.

Syntex (U.S.A.) Inc.: *See*—
Kracklauer, John J.; and Sparkes, Charles J., 4,341,881, Cl. 524-176.000.

Synthelabo: *See*—
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Synthes AG: *See*—
Perrett, T. Robert; Sutter, Franz; and Gisin, Paul, 4,341,206, Cl. 128-92.0EB.

Sysak, Peter K., to Du Pont de Nemours, E. I., and Company. Photoimaging compositions containing substituted cyclohexadienone compounds. 4,341,860, Cl. 430-277.000.

Syva Company: *See*—
Yoshida, Robert A., 4,341,866, Cl. 435-7.000.

Szulczyk, Andreas: *See*—
Bohm, Wolfgang; Wolmer, Roger; Szulczyk, Andreas; and Malikowski, Willi, 4,341,556, Cl. 75-173.00A.

Tabak, Samuel A.; and Morrison, Roger A., to Mobil Oil Corporation. Manufacture of benzene, toluene and xylene. 4,341,622, Cl. 208-66.000.

Tabata, Youichiro: *See*—
Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, 4,341,947, Cl. 219-383.000.

Tachikawa, Kyoji; Togano, Kazumasa; and Takeuchi, Takao, to National Research Institute for Metals. Method for producing Nb_3Sn superconductors. 4,341,572, Cl. 148-11.50F.

Tada, Yoshimitsu: *See*—
Matsushita, Susumu; Tada, Yoshimitsu; and Ikushige, Tetsuo, 4,341,634, Cl. 210-656.000.

Takada, Takuzo: *See*—
Suzuki, Sadao; Kinoshita, Harumi; Takada, Takuzo; and Negishi, Fumio, 4,341,317, Cl. 215-31.000.

Takagi, Isao: *See*—
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Takahashi, Kunimasa; Imanari, Makoto; and Watanabe, Yoshihisa, to Mitsubishi Petrochemical Co. Ltd. Process for producing alkenyl-substituted aromatic compounds and catalyst therefor. 4,341,912, Cl. 585-443.000.

Takahashi, Noriyoshi: *See*—
Tohara, Kazuo; Yamashita, Seizi; Matsui, Takayuki; Motegi, Shoji; and Takahashi, Noriyoshi, 4,341,971, Cl. 310-195.000.

Takamura, Yoshiyuki: *See*—
Chino, Koichi; Yusa, Hideo; Oda, Akira; Miura, Hideichi; Horiuchi, Susumu; and Takamura, Yoshiyuki, 4,341,595, Cl. 159-6.00W.

Takase, Yoshiyuki: *See*—
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Takasugi, Hisashi: *See*—
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Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,341,775, Cl. 424-246.000.

Takeda, Akitsu: *See*—
Mizushima, Yoshihiko; Takeda, Akitsu; Komiya, Kazumi; Sakaue, Masahiro; Ogino, Toshio; Itoh, Hideo; and Oka, Masayoshi, 4,341,954, Cl. 250-211.00J.

Takeda Chemical Industries, Ltd.: *See*—
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Marumoto, Ryuji; Shima, Shunsuke; and Tanabe, Masao, 4,341,769, Cl. 424-180.000.

Takeda, Kazuyoshi: *See*—
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Takeda, Keiso; Inouye, Shozo; and Kashiwakura, Toshimi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel injection type carburetor. 4,341,191, Cl. 123-445.000.

Takei, Katsumori; Kanbe, Sadao; and Shionozaki, Yoshio, to Kabushiki Kaisha Suwa Seikosha. Ester compounds, liquid crystal composition including same and method of production. 4,341,652, Cl. 252-299.500.

Takenaka, Shigeo: *See*—
Noguchi, Mikio; Kobayashi, Kazuho; Takenaka, Shigeo; and Shimbo, Masaru, 4,341,980, Cl. 315-169.100.

Takeshige, Kenji: *See*—
Matsubara, Hiroyoshi; Takeshige, Kenji; Osuka, Tatsumi; Nagamine, Takashi; Hirano, Osamu; Tanaka, Jinkichi; Watanabe, Itaru; and Suzuki, Motoaki, 4,341,938, Cl. 219-61.000.

Takeuchi, Takao: *See*—
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Talleres de Escoriaza S.A.: *See*—
Garro, Jose P., 4,341,099, Cl. 70-25.000.

Tamm, Paul W., to Chevron Research Company. Method for preparing a catalyst carrier, a catalyst containing the carrier, and a hydrocarbon hydrodesulfurization process using the catalyst. 4,341,625, Cl. 208-216.0PP.

Tamosauskas, Albert E., to PPG Industries, Inc. Antioxidants and reinforced polymers and oil-in-water emulsions of antioxidants. 4,341,677, Cl. 523-421.000.

Tampax Incorporated: *See*—
Eldridge, William T., 4,341,215, Cl. 128-285.000.

Tamutus, Donald J., to RCA Corporation. Method of fabricating a color-selection structure for a CRT. 4,341,591, Cl. 156-630.000.

Tanabe, Masao: *See*—
Marumoto, Ryuji; Shima, Shunsuke; and Tanabe, Masao, 4,341,769, Cl. 424-180.000.

Tanahashi, Toshio: *See*—
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Tanaka, Jinkichi: *See*—
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Tanigawa, Koichi: *See*—
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Tanimoto, Fumio: *See*—
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, 4,341,665, Cl. 252-522.00R.

Tappen, Frank M.: *See*—
Caccoma, George A.; Koestner, Joseph H.; O'Neill, Brian C.; and Tappen, Frank M., 4,342,090, Cl. 364-491.000.

Tarchominskie Zaklady Farmaceutyczne: *See*—
Cieslak, Jerzy; Busko-Oszczapowicz, Irena; and Stepniak, Marek, 4,341,779, Cl. 424-248.510.

Tardy, Roger, to Sofrance S.A. Devices for extracting a sample of fluid from a hydraulic circuit. 4,341,125, Cl. 73-863.250.

Tate, Takao: *See*—
Ishikawa, Norikatsu; Obata, Haruyuki; Onaka, Hidemi; Tate, Takao; Tanahashi, Toshio; and Hagino, Isamu, 4,341,190, Cl. 123-439.000.

Tateno, Haruo, to Rikagaku Kenkyusho. Method of operating a plasma generating apparatus. 4,341,941, Cl. 219-121.0PU.

Taylor, Lynn J.; and Grier, John D., to Owens-Illinois, Inc. Composition of matter. 4,341,820, Cl. 427-226.000.

TDK Electronics: *See*—
Hiromitsu, Hirayama, 4,342,075, Cl. 363-23.000.

TDK Electronics Co., Ltd.: *See*—
Shoji, Shigemasa, 4,341,358, Cl. 242-74.100.

Tebbe, Frederick N., to Du Pont de Nemours, E. I., and Company. Simultaneous oxidation and extraction of vanadium from wet-process phosphoric acid. 4,341,743, Cl. 423-63.000.

Technicare Corporation: *See*—
Gardineer, Bayard G.; and Heringes, James A., 4,341,222, Cl. 128-660.000.

Teikoku Hormone Mfg. Co., Ltd.: *See*—
Sakakibara, Kyoichi; Manita, Hideaki; Gondo, Masaaki; and Yamashita, Haruo, 4,341,758, Cl. 424-12.000.

Teknational Industries Inc.: *See*—
Kling, Jarrett B., 4,342,068, Cl. 361-386.000.

Tektronix, Inc.: *See*—
Larson, Robin R., 4,342,065, Cl. 361-93.000.

Temmerman, Maria. Method and device avoiding the pollution of the atmosphere by noxious gases. 4,341,184, Cl. 123-25.00F.

Terasawa, Koji: *See*—
Kasugayama, Yukio; Terasawa, Koji; and Hattori, Yoshihumi, 4,342,041, Cl. 346-140.00R.

Terui, Nobuo; and Kobayashi, Kozo, to Nakamichi Corporation. Information read device. 4,342,054, Cl. 360-40.000.

Testerman, Roy L., to Medtronic, Inc. Shielded recording electrode system. 4,341,221, Cl. 128-642.000.

Texaco Development Corp.: *See*—
Hunter, Walter D., 4,341,647, Cl. 252-8.55D.

Texaco Inc.: *See*—
Canup, Robert E.; and Alperstein, Martin, 4,341,196, Cl. 123-643.000.
Duranleau, Roger G.; and Gates, Walter C., Jr., 4,341,531, Cl. 48-197.00R.

Texas Alkyls, Inc.: *See*—
Malpass, Dennis B.; and Yeargin, G. Scott, 4,341,910, Cl. 568-878.000.

Texas Instruments Incorporated: *See*—
Boone, Gary W., 4,342,094, Cl. 364-900.000.
Kuo, Chang-Kiang, 4,342,099, Cl. 365-104.000.
Kuo, Chang-Kiang, 4,342,100, Cl. 365-104.000.
Landes, James L., 4,341,574, Cl. 156-64.000.
Shortes, Samuel R.; and Penn, Thomas C., 4,341,592, Cl. 156-643.000.

Tezuka, Yasuo; Sunami, Masaki; Omura, Takashi; and Kayane, Yutaka, to Sumitomo Chemical Company, Limited. Reactive red dye having both monochlorotriazinyl- and vinylsulfone-type reactive groups. 4,341,699, Cl. 260-153.000.

Thackrey, James D. Golf swing diagnostic apparatus. 4,341,384, Cl. 273-186.00A.

Theil, Kenneth W.: *See*—
Wyatt, Richard G.; James, Walter D.; Bohl, Edward H.; Theil, Kenneth W.; Saif, Linda J.; Kalica, Anthony R.; Greenberg, Harry B.; Kapikian, Albert Z.; and Chanock, Robert M., 4,341,870, Cl. 435-237.000.

Theilen, Rolf, to Triumph-Adler A.G. fur Buro-und Informationstechnik. Paper handling assembly for typewriters or like machines. 4,341,477, Cl. 400-56.000.

Thiem, Karl W.; and Vanderpool, Daniel P., to Mobay Chemical Corporation. Process for the production of 5-nitro-acet-2,4-xylidine. 4,341,902, Cl. 564-218.000.

Thiessen, Robert J.: *See*—
Shaw, Michael J.; and Thiessen, Robert J., 4,341,839, Cl. 428-342.000.

Thomas, Hubert E. Variable amplitude vibratory apparatus. 4,341,126, Cl. 74-61.000.

Thomas, Rudy V., to Allied Corporation. Passive seat belt system. 4,341,399, Cl. 280-802.000.

Thomis, Wendl: *See*—
Doyle, Holly T.; Doyle, Robert O.; and Thomis, Wendl, 4,341,385, Cl. 273-237.000.

Thompson, Donald R.; and White, John R., to Goodyear Tire & Rubber Company, The. Mold. 4,341,368, Cl. 249-142.000.

Thompson, Elmer R. Sewing machine conversion apparatus. 4,341,172, Cl. 112-310.000.

Thompson, Richard C.: *See*—
Wigdahl, Arthur G., 4,341,258, Cl. 164-337.000.

Thomson-CSF: *See*—
Castera, Jean P.; and Hartemann, Pierre, 4,341,998, Cl. 324-244.000.

Thomson, Robert; and Emmett, John R., to Canadian Patents & Dev. Ltd. Method of casting elongated members of reactive metals and reactive metal alloys. 4,341,261, Cl. 164-475.000.

Thornell, Lennart, to ASEA Aktiebolag. Memory circuit in a relay protection device. 4,342,063, Cl. 361-79.000.

Thornton, William A., Jr.; and Larson, Daniel A., to Westinghouse Electric Corp. High-intensity-discharge lamp with improved color rendition of illuminated objects. 4,341,978, Cl. 313-487.000.

Thuries, Edmond; and Masson, Jean-Paul, to Societe Anonyme dite: Delle-Alsthom. Electric power substation for use at very high voltages. 4,342,067, Cl. 361-333.000.

Tibolla, Marcellino: *See*—
Doria, Gianfederico; Romeo, Ciriaco; Sberze, Piero; Tibolla, Marcellino; and Corno, Maria L., 4,341,780, Cl. 424-248.550.

TIE/Communications, Inc.: *See*—
Shinoi, Tsuyoshi; and Hamatani, Fumikazu, 4,341,927, Cl. 179-2.0DP.

TII Corporation: *See*—
Novak, Frederick C., 4,341,641, Cl. 210-752.000.

Tijburg, Rudolf P.; and van Dongen, Teunis, to U.S. Philips Corporation. Fabrication of electroluminescent semiconductor device utilizing selective etching and epitaxial deposition. 4,341,010, Cl. 29-580.000.

Tilles, Harry, to Stauffer Chemical Company. Herbicidal active sulfoxide and sulfone compounds. 4,341,702, Cl. 260-239.0BF.

Times Fiber Communications, Inc.: *See*—
Dabby, Franklin W.; and Chesler, Ronald B., 4,341,541, Cl. 65-3.120.

Timex Corporation: *See*—
Dorfman, Leonard, 4,342,105, Cl. 368-88.000.

Timken Company, The: *See*—
Clapp, James R., 4,341,426, Cl. 308-187.100.

Tinchant, Xavier, to Clesid S.A. Panel for electric furnace. 4,342,118, Cl. 373-76.000.

Tison, Raymond R., to E:F Technology, Inc. Solar power system requiring no active control device. 4,341,607, Cl. 204-129.000.

Titus Tool Company Limited: *See*—
Appleby, Robert H.; and Cove, Peter L., 4,341,485, Cl. 403-231.000.

Tobias, Michael A., to Mobil Oil Corporation. Composition comprising ester of epoxy, carbonyl containing polybutadiene polymer and acid containing addition polymer, and aqueous coating compositions prepared therefrom. 4,341,682, Cl. 523-409.000.

Toda, Hiromichi: *See*—
Kawasaki, Tetsuro; and Toda, Hiromichi, 4,341,994, Cl. 324-132.000.

Toda, Kimio; and Tokushima, Yasuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of applying water-base paint. 4,341,821, Cl. 427-299.000.

Toda, Takao: *See*—
Kashiwagi, Kazuo; Arai, Toshio; Toda, Takao; Shirai, Masanari; and Yanagi, Masaaki, 4,341,463, Cl. 355-14.0CH.

Togano, Kazumasa: *See*—
Tachikawa, Kyoji; Togano, Kazumasa; and Takeuchi, Takao, 4,341,572, Cl. 148-11.50F.

Tohara, Kazuo; Yamashita, Seizi; Matsui, Takayuki; Motegi, Shoji; and Takahashi, Noriyoshi, to Hitachi, Ltd. Armature of electric rotating machine. 4,341,971, Cl. 310-195.000.

Tokuda Seisakusyo, Ltd.: *See—*
Kurisaki, Tetuo; Horiike, Yasuhiro; and Yamazaki, Takashi, 4,341,593, Cl. 156-643.000.
Tokunaga, Kiyohiko: *See—*
Fujinami, Susumu; Miyamoto, Hiroaki; Morimine, Ryoichi; Fukuzawa, Toshiki; Ueda, Toshihiko; Umakoshi, Shoji; and Tokunaga, Kiyohiko, 4,341,628, Cl. 210-101.000.
Tokushima, Yasuo: *See—*
Toda, Kimio; and Tokushima, Yasuo, 4,341,821, Cl. 427-299.000.
Tokutomi, Takashi: *See—*
Murakami, Fumiki; Ikeda, Minoru; Tokutomi, Takashi; and Nakano, Toshiharu, 4,341,536, Cl. 55-93.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Iida, Tetsuya; and Sakaue, Tatsuo, 4,342,004, Cl. 330-253.000.
Ishii, Shouichi; Shimanuki, Masanobu; and Morizono, Akira, 4,342,056, Cl. 360-72.100.
Kohyama, Mitsuaki, 4,341,460, Cl. 355-13.000.
Kubo, Osamu; Ido, Tadashi; Nomura, Tutomu; and Inomata, Koichiro, 4,341,648, Cl. 252-62.630.
Kumagi, Shigeki, 4,342,092, Cl. 364-569.000.
Kurisaki, Tetuo; Horiike, Yasuhiro; and Yamazaki, Takashi, 4,341,593, Cl. 156-643.000.
Noguchi, Mikio; Kobayashi, Kazuho; Takenaka, Shigeo; and Shimbo, Masaru, 4,341,980, Cl. 315-169.100.
Ozeki, Kenichi; Wada, Toyoji; Ito, Kunio; Tomimori, Tetsuo; Takagi, Isao; and Nekado, Mitsunobu, 4,341,687, Cl. 524-500.000.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Nishida, Katsutoshi; Komatsu, Michiyasu; and Miyano, Tadashi, 4,341,874, Cl. 501-97.000.
Tomasetti, Charles M.; Harsh, Maurice D.; and McDonie, Arthur F., to RCA Corporation. Method for stabilizing the anode sensitivity of a photomultiplier tube. 4,341,427, Cl. 316-1.000.
Tomiita, Kazuo: *See—*
Negishi, Takao; and Tomiita, Kazuo, 4,341,068, Cl. 57-288.000.
Tomimori, Tetsuo: *See—*
Ozeki, Kenichi; Wada, Toyoji; Ito, Kunio; Tomimori, Tetsuo; Takagi, Isao; and Nekado, Mitsunobu, 4,341,687, Cl. 524-500.000.
Tondeo-Werk GmbH: *See—*
Schultz, Erhard, 4,341,305, Cl. 206-350.000.
Toray Industries, Incorporated: *See—*
Negishi, Takao; and Tomiita, Kazuo, 4,341,068, Cl. 57-288.000.
Okuo, Takayasu; Masaki, Takaki; and Kobayashi, Keisuke, 4,341,965, Cl. 310-11.000.
Toray Silicone Company, Ltd.: *See—*
Nakamura, Akito, 4,341,675, Cl. 524-266.000.
Toyama, Tadao; Nakao, Sho; Shiba, Keisuke; Sera, Hidefumi; and Ogawa, Masasi, to Fuji Photo Film Co., Ltd. Photosensitive lithographic printing plate precursors. 4,341,856, Cl. 430-156.000.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Matsushita, Susumu; Tada, Yoshimitsu; and Ikushige, Tetsuo, 4,341,634, Cl. 210-656.000.
Toyoda, Kenji; and Hirano, Haruo, to Nippon Kogaku K.K. Light receiving element assembly in a camera. 4,341,448, Cl. 354-59.000.
Toyoda, Takashi; Ohba, Yozo; and Yamanaka, Masaaki, to Oji Yuka Goseishi Kabushiki Kaisha. Resin compositions of improved hue. 4,341,880, Cl. 524-101.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Ishikawa, Norikatsu; Obata, Haruyuki; Onaka, Hidemi; Tate, Takao; Tanahashi, Toshio; and Hagino, Isamu, 4,341,190, Cl. 123-439.000.
Takeda, Keiso; Inouye, Shozo; and Kashiwakura, Toshimi, 4,341,191, Cl. 123-445.000.
Toda, Kimio; and Tokushima, Yasuo, 4,341,821, Cl. 427-299.000.
Tozier, John E.; and Shaffer, John W., to GTE Products Corporation. Flashlamp containment coating. 4,341,817, Cl. 427-54.100.
Traino, James C., to Xerox Corporation. Beam intensity measurement system for raster scanners. 4,342,050, Cl. 358-256.000.
Tredennick, Harry L.; and Gunter, Thomas G., to Motorola, Inc. Instruction register sequence decoder for microprogrammed data processor and method. 4,342,078, Cl. 364-200.000.
Trementozzi, Quirino A.: *See—*
Lee, Yoon C.; and Trementozzi, Quirino A., 4,341,695, Cl. 524-342.000.
Trescher, Viktor: *See—*
Vogel, Axel; Steffan, Guido; Mannes, Karl; and Trescher, Viktor, 4,341,720, Cl. 260-544.00Y.
Trezeguet, Jean-Pierre; Vives, Jean-Patrick; and Comte, Georges, to Societe Anonyme dite: Les Cables de Lyon. Undersea optical fiber telecommunications cable. 4,341,440, Cl. 350-96.230.
Triolet Silo Europe BV: *See—*
Liet, Fredericus; and Liet, Cornelis H., 4,341,354, Cl. 241-101.700.
Triumph-Adler A.G. fur Buro-und Informationstechnik: *See—*
Theilen, Rolf, 4,341,477, Cl. 400-56.000.
Truswal Systems Corp.: *See—*
Bowser, Donald M., 4,341,153, Cl. 100-35.000.
TRW Inc.: *See—*
Hodge, Malcolm H., 4,341,439, Cl. 350-96.220.
Tseng, Tsiung-Siung. Marine derrick arrangement. 4,341,315, Cl. 212-193.000.
Tsui, Kwok W.; and Yuen, Sing C. J., to Arco Industries Ltd. Toy washing machine. 4,341,034, Cl. 46-14.000.
Tsukagoshi, Tsunehiro: *See—*
Imai, Kunio; Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,341,838, Cl. 428-338.000.
Tsukiura, Hiroshi: *See—*
Konishi, Masatnka; Miyaki, Takeo; Tsukiura, Hiroshi; and Kawaguchi, Hiroshi, 4,341,768, Cl. 424-177.000.
Tsunoda, Masakazu; and Kawasaki, Teruo, to Nissan Motor Company, Limited. Noise level controlled voice warning system for an automotive vehicle. 4,342,023, Cl. 340-52.00F.
Tucker, Billie D.: *See—*
Das, Balbhadra; and Tucker, Billie D., 4,341,877, Cl. 523-409.000.
Tufts, Robert A.: *See—*
Gold, Raymond D.; Tufts, Robert A.; and Schillerstrom, Merle S., 4,341,311, Cl. 209-644.000.
Tuites, Richard C.: *See—*
Chaffee, Eleanor; and Tuites, Richard C., 4,341,858, Cl. 430-217.000.
Turbak, Albin F.; Snyder, Fred W.; and Sandberg, Karen R., to International Telephone and Telegraph Corporation. Food products containing microfibrillated cellulose. 4,341,807, Cl. 426-570.000.
Turczyk, Michael: *See—*
Jung, Alfred K.; Turczyk, Michael; and Weil, Edward D., 4,341,692, Cl. 524-263.000.
Turner, David L., to Litton Industrial Products, Inc. Feed mechanism. 4,341,297, Cl. 198-408.000.
Turner, Paul F., to BSD Corporation. System for irradiating living tissue or simulations thereof. 4,341,227, Cl. 128-804.000.
Tylan Corporation: *See—*
Blair, Richard F.; and Beazley, Ralph, 4,341,107, Cl. 73-3.000.
Tyler Refrigeration Corporation: *See—*
Ibrahim, Fayez F., 4,341,081, Cl. 62-82.000.
Ibrahim, Fayez F., 4,341,082, Cl. 62-82.000.
Ibrahim, Fayez F.; and Subera, Elmer J., 4,341,083, Cl. 62-82.000.
Ibrahim, Fayez F.; and Perez, Arthur, 4,341,089, Cl. 62-246.000.
Tynan, Eugene E.: *See—*
Chaudhari, Praveen; Kiessling, John B.; Perlman, David J.; Tynan, Eugene E.; and von Gutfeld, Robert J., 4,341,942, Cl. 219-121.0LD.
Tyrrell, Arthur W. R.: *See—*
Cassidy, Frederick; Baggaley, Keith H.; and Tyrrell, Arthur W. R., 4,341,708, Cl. 260-326.290.
U, Hoi S., to University of California. Detachable balloon catheter. 4,341,218, Cl. 128-325.000.
Uchida, Tomio; and Otabe, Kisaburo, to Caterpillar Mitsubishi Ltd.; and Hokkaido Construction Equipment Sales, Ltd. Bucket assembly for earthmoving machines capable of side dumping as well. 4,341,026, Cl. 37-117.500.
Udipi, Kishore: *See—*
Hsieh, Henry L.; and Udipi, Kishore, 4,341,672, Cl. 523-451.000.
Ueda, Toshihiko: *See—*
Fujinami, Susumu; Miyamoto, Hiroaki; Morimine, Ryoichi; Fukuzawa, Toshiki; Ueda, Toshihiko; Umakoshi, Shoji; and Tokunaga, Kiyohiko, 4,341,628, Cl. 210-101.000.
Ueguri, Shigeo: *See—*
Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, 4,341,947, Cl. 219-383.000.
Uehara, Takeo: *See—*
Yamamoto, Yukio; and Uehara, Takeo, 4,341,043, Cl. 49-449.000.
Ufermann, Werner; and Grzymek, Rolf, to G. Siempelkamp GmbH & Co. Method of and apparatus for cutting a plate into small sections. 4,341,135, Cl. 83-23.000.
Uhlinger, Robert A., to Sand and Sea Industries, Inc. Means for desalination of water through reverse osmosis. 4,341,629, Cl. 210-128.000.
Ullestad, David C.: *See—*
Hammer, Jeffrey M.; Ullestad, David C.; and Wesoloski, Stephen J., 4,341,345, Cl. 236-46.00R.
Umakoshi, Shoji: *See—*
Fujinami, Susumu; Miyamoto, Hiroaki; Morimine, Ryoichi; Fukuzawa, Toshiki; Ueda, Toshihiko; Umakoshi, Shoji; and Tokunaga, Kiyohiko, 4,341,628, Cl. 210-101.000.
Unger, Manfred: *See—*
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Union Carbide Corporation: *See—*
Hargitay, Bartholomew, 4,341,631, Cl. 210-323.200.
Iya, Sridhar K.; Van Slooten, Richard A.; Braaten, Mark E.; and Lay, James R., 4,341,749, Cl. 423-349.000.
Liang, Wei C., 4,341,795, Cl. 424-300.000.
Union Oil Company of California: *See—*
Baron, Kenneth; and McArthur, Dennis P., 4,341,661, Cl. 252-455.00Z.
Uniroyal, Inc.: *See—*
Batorewicz, Wadim, 4,341,721, Cl. 260-930.000.
United Fillers Pty. Ltd.: *See—*
Baker, Andrew J.; and Baker, Alfred G., 4,341,302, Cl. 206-219.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Anderson, Iain; Benjamin, Ralph; and Morgan, Thomas R., 4,342,035, Cl. 343-792.500.
U.S. Flywheels, Inc.: *See—*
Swartout, Bruce E., 4,341,001, Cl. 29-159.300.
United States of America
Administrator, National Aeronautics and Space Administration: *See—*
Fripp, Archibald L.; Robertson, James B.; and Breckenridge, Roger A., 4,341,012, Cl. 29-620.000.
Air Force: *See—*
Seidl, Loren R., 4,342,119, Cl. 455-1.000.
Army: *See—*

Dixon, Samuel, Jr., 4,342,009, Cl. 331-107.0DP.
Dixon, Samuel, Jr.; and Jacobs, Harold, 4,342,010, Cl. 333-17.00L.
Reiter, Alan C., 4,341,158, Cl. 102-215.000.
Director, National Security Agency, U.S. Government: *See*—
Busson, Donald G., 4,342,111, Cl. 370-62.000.
Energy: *See*—
Liu, Chia-tsun; Demczyk, Brian G.; and Gongaware, Paul R., 4,341,848, Cl. 429-27.000.
Loth, John L.; Smith, William C.; and Friggens, Gary R., 4,341,530, Cl. 48-73.000.
Health & Human Services: *See*—
Wyatt, Richard G.; James, Walter D.; Bohl, Edward H.; Theil, Kenneth W.; Saif, Linda J.; Kalica, Anthony R.; Greenberg, Harry B.; Kapikian, Albert Z.; and Chanock, Robert M., 4,341,870, Cl. 435-237.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Doland, George D. Random digital encryption secure communication system. 4,341,925, Cl. 178-22.170.
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Brainard, William A.; and Wheeler, Donald R., 4,341,843, Cl. 428-457.000.
Evans, John C., Jr.; Chai, An-Ti; and Goradia, Chandra P., 4,341,918, Cl. 136-249.000.
Navy: *See*—
Beckert, Werner F.; Barber, William H.; Bowen, Richard E.; and Dengel, Ottmar H., 4,341,651, Cl. 252-188.250.
Browder, George B., 4,341,986, Cl. 318-618.000.
Coffman, Kenneth L., 4,341,996, Cl. 324-162.000.
Stevens, Don L., Jr.; Brown, Steven L.; Malone, John A.; Knowles, Timothy A.; and Webb, Thomas G., 4,341,174, Cl. 114-45.000.
U.S. Philips Corporation: *See*—
Geboers, Josephus J. A.; Janssen, Daniel J. G.; and Bloos, Johannes, 4,341,991, Cl. 323-311.000.
Marin, Guy F. M.; and Riffiod, Michel M. R., 4,342,087, Cl. 364-433.000.
Tijburg, Rudolf P.; and van Dongen, Teunis, 4,341,010, Cl. 29-580.000.
United Technologies Corporation: *See*—
Davis, Jack W., 4,342,115, Cl. 372-87.000.
Niemczyk, Stephen E.; and Hubbard, Richard G., Jr., 4,342,047, Cl. 358-80.000.
Prewo, Karl M.; and Brennan, John J., 4,341,826, Cl. 428-35.000.
Prewo, Karl M., 4,341,840, Cl. 428-408.000.
Sangiovanni, Joseph J.; and Michaud, Raymond J., 4,341,310, Cl. 209-638.000.
Schaefer, James R.; and Radtke, Leland J., 4,341,296, Cl. 192-113.00B.
University of California, The Regents of the: *See*—
Sovak, Milos; and Ranganathan, Ramachandran, 4,341,756, Cl. 424-5.000.
U, Hoi S., 4,341,218, Cl. 128-325.000.
University of Edinburgh, University Court of the: *See*—
Jack, Mervyn A., 4,342,104, Cl. 367-132.000.
UOP Inc.: *See*—
Antos, George J., 4,341,664, Cl. 252-466.0PT.
Berger, Charles V., 4,341,914, Cl. 585-474.000.
Greenwood, Arthur R., 4,341,740, Cl. 422-310.000.
Vora, Bipin V., 4,341,911, Cl. 585-332.000.
Urish, Joseph M.: *See*—
Rosswurm, Mark A.; and Urish, Joseph M., 4,342,076, Cl. 363-56.000.
Ushino, Masashi: *See*—
Kondo, Kanetaka; Morita, Takayuki; and Ushino, Masashi, 4,341,067, Cl. 57-275.000.
Utner, Ferdinand; Vetter, Harald; and Nutz, Ludwig, to Siemens Aktiengesellschaft. Electrical network. 4,342,020, Cl. 338-314.000.
Vadnay, Attila; and Boomus, Mary K., to Gelman Instrument Company. Intravenous filter. 4,341,538, Cl. 55-159.000.
Valley People, Inc.: *See*—
Buff, Paul C., 4,341,962, Cl. 307-492.000.
Valmont Industries, Inc.: *See*—
Stauffer, Howard V., 4,341,237, Cl. 137-382.500.
Vanags, Paul, to Fortasauna Limited. Bathing device. 4,340,981, Cl. 4-536.000.
VanAllan, James A.: *See*—
Regan, Michael T.; Reynolds, George A.; Specht, Donald P.; and VanAllan, James A., 4,341,894, Cl. 544-333.000.
Vandenburgh, Garret K. Vehicle tire and method of manufacture. 4,341,577, Cl. 156-121.000.
Vanderbilt University: *See*—
Kaplan, Albert S.; Kaplan, Tamar B.; and Chen, Anthony B., 4,341,754, Cl. 424-1.000.
Vanderpool, Daniel P.: *See*—
Thiem, Karl W.; and Vanderpool, Daniel P., 4,341,902, Cl. 564-218.000.
Vanderveen, John W., to Phillips Petroleum Company. Carbon black production. 4,341,750, Cl. 423-450.000.
Vandewalle, Jan J.; Monbaliu, Marcel J.; and Van Poucke, Raphael K., to Agfa-Gevaert, N.V. Photographic elements containing cyan-forming couplers. 4,341,864, Cl. 430-505.000.
van Dongen, Teunis: *See*—
Tijburg, Rudolf P.; and van Dongen, Teunis, 4,341,010, Cl. 29-580.000.
van Dongeren, Jan P., to Wavin B.V. Plastics pipes having walls with lengthwise extending channels. 4,341,392, Cl. 277-207.00A.
Vanek, Vladimir: *See*—
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Van Steenburgh, Leon R., Jr., to Mile High Equipment Company. Automatic ice cube making apparatus. 4,341,087, Cl. 62-233.000.
Vapor Corporation: *See*—
Condon, James E.; Roth, Carl W.; and Gritchen, Ralph A., 4,341,398, Cl. 280-711.000.
Varian Associates, Inc.: *See*—
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Streicher, Rudolf; and Pol, Manfred, 4,341,425, Cl. 301-64.0SH.
Vermilion, Donn R.; and Hammond, Donald J., to Owens-Corning Fiberglas Corporation. Composition for impregnating glass fiber cords for reinforcing elastomeric products. 4,341,674, Cl. 524-156.000.
Vernay Laboratories, Inc.: *See*—
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Hann, Simon A., 4,341,269, Cl. 172-311.000.
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Virgin, George C. Electromagnetic induction energy converter. 4,341,936, Cl. 219-10.510.
Visger, Robert L.; and Plano, Mark A., to Olin Corporation. High flexural modulus reaction injection molded urethanes. 4,341,875, Cl. 521-164.000.
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Voest-Alpine Aktiengesellschaft: *See*—
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Vogel, Axel; Steffan, Guido; Mannes, Karl; and Trescher, Viktor, to Bayer Aktiengesellschaft. Process for the preparation of oxalyl chloride. 4,341,720, Cl. 260-544.00Y.
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Vola, Mathias J. J. M., to Oce-Nederland B.V. Reproduction apparatus employing a cassette with a finite belt. 4,341,464, Cl. 355-16.000.
Volkert, Otto: *See*—
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Vora, Bipin V., to UOP Inc. Hydrocarbon conversion process for the production of gasoline. 4,341,911, Cl. 585-332.000.
Voss, Gunther M. Rope clamping device comprising two toothed clamping elements adapted to be pressed against the rope. 4,340,997, Cl. 24-115.00L.
Voss, Houston F., to Abbott Laboratories. Determination of thyroxine binding globulin. 4,341,865, Cl. 435-7.000.
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Walker, Roger; and Holdsworth, Alan, to McCorquodale Machine Systems Limited. Apparatus for performing operations on a stack of sheets. 4,341,299, Cl. 198-434.000.
Wallace, Donald G.; Schneider, Phillip M.; and Lundblad, John L., to Cutter Laboratories, Inc. Method of preparing fibronectin and antihemophilic factor. 4,341,764, Cl. 424-101.000.
Wallace Murray Corporation: *See*—
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Wallace, Richard A. Dental handpiece. 4,341,518, Cl. 433-29.000.
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Ward, John, to Nabisco Brands, Inc. Edible fat product II. 4,341,813, Cl. 426-603.000.
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Watson, James M., to Cosden Technology, Inc. Polymerization inhibitor for vinyltoluene. 4,341,600, Cl. 203-9.000.
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Wayne, Michael. Truck bed liner. 4,341,412, Cl. 296-39.00R.
Weaver, Gerald Q.; and Nelson, Bruce G. Molding refractory and metal shapes by slip-casting. 4,341,725, Cl. 264-28.000.
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Weitzen, William, to General Technology Applications, Inc. Immobilizing toxic liquids. 4,341,078, Cl. 62-48.000.
Wells, Jasper D.; and Gilbert, Robert M., to Electric Hose & Rubber Company. Cable making apparatus. 4,341,064, Cl. 57-13.000.
Welter, Thomas N. H., to Goodyear Tire & Rubber Company, The. Compression sidewall tire reinforced for deflated operation. 4,341,249, Cl. 152-330.0RF.
Welter, Thomas N. H., to Goodyear Tire & Rubber Company, The. Split carcass tire. 4,341,250, Cl. 152-354.00R.
Wemmer, Otto. Chemical injection system for high pressure washers. 4,341,350, Cl. 239-312.000.
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Kemmler, Gerhard; Wieczorek, Herbert; and Plessing, Jurgen, 4,341,738, Cl. 422-184.000.

Wieder, Irwin, to Analytical Radiation Corporation. Fluorescent antibody composition for immunofluorometric assay. 4,341,957, Cl. 250-461.200.

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Wigdahl, Arthur G., to Thompson, Richard C. Solder reclaiming apparatus. 4,341,258, Cl. 164-337.000.

Wilcox, Arnold G., Jr.; and Plumley, Roger D., to Fairchild Incorporated. Mobile dual auger continuous mining machine with multiple movement capabilities. 4,341,424, Cl. 299-57.000.

Wildmoser, Alfred: *See*—
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Williams, Donald F.; and Phy, Charles L. Method for forming paper boxes and the like. 4,341,055, Cl. 53-462.000.

Willis, Brian J.; Christenson, Philip A.; and Mack, Robert A., to Fritzsche Dodge & Olcott Inc. Ambrinol and its homologues. 4,341,908, Cl. 568-819.000.

Wilson, Joseph P.: *See*—
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Wirth, Eugene A.: *See*—
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Wirth, Josef: *See*—
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Woinsky, Samuel G., to Occidental Petroleum Corporation. Process and system for recovery of energy from geothermal brines and other hot water sources. 4,341,077, Cl. 60-641.300.

Wojcieson, Raymond J.; Fuhrman, Fred L.; and O'Hara, John J., to Hauck Manufacturing Company. Burner. 4,341,512, Cl. 431-284.000.

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Wollensak, Daniel W., to Sanford Research Company. Writing instrument with barrel and ferrule assembly. 4,341,481, Cl. 401-251.000.

Wollensak, Daniel W., to Sanford Research Company. Housing assembly for fluid marking device. 4,341,482, Cl. 401-251.000.

Wollensak, John C.; Ihrman, Kryn G.; and Jarema, Chester P., to Ethyl Corporation. Process for rearrangement of alkyl groups on aromatic amines. 4,341,903, Cl. 564-409.000.

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Wolters, Gerhard; and Bergmann, Horst, to Daimler-Benz Aktiengesellschaft. Internal combustion engine, especially for trucks driven with gas-stored in liquid condition in a fuel tank. 4,341,194, Cl. 123-557.000.

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Woods, Kenneth P. R., to Coachwork Conversions Limited. Vehicle body. 4,341,413, Cl. 296-50.000.

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Woodward, Milton H.: *See*—
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Wootton, Gordon: *See*—
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Wray, William R., to Polaroid Corporation. Electronic gain and noise control for recording of analog information. 4,342,059, Cl. 360-123.000.

Wright, Jerry D., to Wright Leather Goods Manufacturing Co. Filigreed belt and process. 4,340,976, Cl. 2-338.000.

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Wu, Hsin-Chih; and Sockell, Edward J., to Standard Oil Co., The. Ammonium sulfate recovery process. 4,341,535, Cl. 55-85.000.

Wust, Willi: *See*—
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Wyatt, Richard G.; James, Walter D.; Bohl, Edward H.; Theil, Kenneth W.; Saif, Linda J.; Kalica, Anthony R.; Greenberg, Harry B.; Kapikian, Albert Z.; and Chanock, Robert M., to United States of America, Health & Human Services. Cultivatable human rotavirus type 2. 4,341,870, Cl. 435-237.000.

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Iyer, Venkat K.; Borostyan, Stephen; and Blair, Timothy T., 4,341,456, Cl. 355-3.0TR.
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Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, to Nippon Soken, Inc. Knock detecting apparatus for combustion engines. 4,341,189, Cl. 123-425.000.

Yamamoto, Yukio; and Uehara, Takeo, to Yoshida Kogyo K.K. Weathertight sliding sash window assembly. 4,341,043, Cl. 49-449.000.

Yamanaka, Masaaki: *See*—
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Yanagi, Masaaki: *See*—
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Yaron, Giora; Harari, Eliyahou; Wang, Samuel T.; and Hess, LaVerne D., to Hughes Aircraft Company. Semiconductor on insulator laser process. 4,341,569, Cl. 148-1.500.

Yashiro, Kuniji; and Moriya, Yoshio, to Hooker Chemicals & Plastics Corp. Metal surface coating agent. 4,341,558, Cl. 106-14.120.

Yatsuzuka, Yohtaro: *See*—
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Yokohama Kiko Co., Ltd.: *See*—
Ohno, Akira; Katayama, Shitomi; Nomura, Suguru; Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; and Imai, Hiroshi, 4,341,841, Cl. 428-414.000.

Yokoo, Kiyotaka; Mitsuhashi, Sadayuki; and Wakamatsu, Kazutoshi, to Nippon Electric Co., Ltd. Transfer-type electromagnetic relay comprising a coil around a housing of the relay and an armature carrying movable contacts at both ends. 4,342,016, Cl. 335-79.000.

Yokozeki, Shinichi: *See*—
Imai, Kunio; Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,341,838, Cl. 428-338.000.

Yoneda, Kanji: *See*—
Kuzunuki, Soshiro; Hirasawa, Kotaro; Imai, Masumi; Yuminaka, Takeo; Sakata, Kazuhiro; and Yoneda, Kanji, 4,341,287, Cl. 187-29.00R.

Yonezawa, Keitaro: *See*—
Daicho, Norio; and Yonezawa, Keitaro, 4,341,245, Cl. 141-18.000.

York-Shipley, Inc.: *See*—
Korenberg, Jakob, 4,341,515, Cl. 432-15.000.

Yoshida Industry Co., Ltd.: *See*—
Ogasawara, Hirotake, 4,341,319, Cl. 215-307.000.

Yoshida Kogyo K.K.: *See*—
Yamamoto, Yukio; and Uehara, Takeo, 4,341,043, Cl. 49-449.000.

Yoshida, Robert A., to Syva Company. Antienzyme termination in enzyme immunoassays. 4,341,866, Cl. 435-7.000.

Yoshino Kogyosho Co., Ltd.: *See*—
Suzuki, Sadao; Kinoshita, Harumi; Takada, Takuzo; and Negishi, Fumio, 4,341,317, Cl. 215-31.000.

Yoshino, Toshikazu: *See*—
Imai, Kunio; Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,341,838, Cl. 428-338.000.

Yoshizawa, Tamotu: *See*—
Murakoshi, Makoto; and Yoshizawa, Tamotu, 4,341,128, Cl. 74-479.000.

Young, Patrick. Nail clipper assembly. 4,341,015, Cl. 30-28.000.

Young, Peter L.: *See*—
Borrelli, Nicholas F.; Whitman, Arthur J.; and Young, Peter L., 4,341,863, Cl. 430-346.000.

Young, Robert N.: *See*—
Belanger, Patrice C.; and Young, Robert N., 4,341,904, Cl. 564-427.000.

Youngfleish, Frank C.: *See*—
Cherian, Gabriel B.; Scheingold, William S.; and Youngfleish, Frank C., 4,341,433, Cl. 339-176.0MP.

Yuen, Sing C. J.: *See*—
Tsui, Kwok W.; and Yuen, Sing C. J., 4,341,034, Cl. 46-14.000.

Yuminaka, Takeo: *See*—
Kuzunuki, Soshiro; Hirasawa, Kotaro; Imai, Masumi; Yuminaka, Takeo; Sakata, Kazuhiro; and Yoneda, Kanji, 4,341,287, Cl. 187-29.00R.

Yusa, Hideo: *See*—
Chino, Koichi; Yusa, Hideo; Oda, Akira; Miura, Hideichi; Horiuchi, Susumu; and Takamura, Yoshiyuki, 4,341,595, Cl. 159-6.00W.

Zahnradfabrik Friedrichshafen A.G.: *See*—
Freitag, Manfred, 4,341,295, Cl. 192-53.00E.

Zander, Rolf; Lang, Werner; and Wolf, Hans U. Process and reagent for determination of the hemoglobin content of blood. 4,341,527, Cl. 23-230.00B.

Zankich, Frank A., to Rexnord Inc. Adjustable retention latch assembly. 4,341,407, Cl. 292-111.000.

Zeitz, Vernon. Digital proportional metering pumping system. 4,341,327, Cl. 222-63.000.

Zelex, Inc.: *See*—
Alexander, Richard D.; Christofferson, John L.; and Ward, William H., Jr., 4,341,929, Cl. 179-90.00B.

Zellweger Uster Ltd.: *See*—
Baumgartner, August; and Plaschy, Martin, 4,341,065, Cl. 57-22.000.
Baumgartner, August, 4,341,066, Cl. 57-22.000.

Zelonka, Ronald A., to Du Pont Canada Inc. Catalytic oxidation of cycloparaffins. 4,341,907, Cl. 568-360.000.

Zenith Radio Corporation: *See*—
Falater, Scott L.; and Bretl, Wayne E., 4,342,048, Cl. 358-242.000.

Zgraggen, Martin A.: *See*—
Penn, William B.; and Zgraggen, Martin A., 4,341,972, Cl. 310-233.000.

Ziemann, Ronald W. Solar energy collecting and utilization system. 4,341,201, Cl. 126-422.000.

Zimmer, Inc.: *See*—
Anuta, David A., 4,341,691, Cl. 523-116.000.

Zimmermann, Heinrich; and Schamberger, Jorg. Pick-up needle. 4,342,107, Cl. 369-172.000.

Zinke, Horst, to Ciba-Geigy Corporation. 2-Thiono-(2H) [1,3,2] dioxaphosphorinanes (phospholanes). 4,341,722, Cl. 260-937.000.

Zopf, Richard F.: *See*—
Keane, John J.; and Zopf, Richard F., 4,341,859, Cl. 430-270.000.

Zopff, Hans; and Muller, Hans-Ekkehard, to Kommanditgesellschaft "ALBERTA" Chemische Fabrik GmbH & Co. Process for eliminating acidic components from waste gases. 4,341,745, Cl. 423-210.000.

Zore, Frank E., to Container Corporation of America. Hollow wall tray and cover closure lock arrangement. 4,341,339, Cl. 229-34.0HW.

Zotov, Sergei N.: *See*—
Koshlyak, Leonid L.; Kareev, Jury P.; Romankov, Evgeny A.; Zotov, Sergei N.; Belopolsky, Marx S.; and Kalinovsky, Villen V., 4,341,724, Cl. 264-27.000.

Zygraich, Nathan, to SmithKline-Rit. Methods of vaccinating humans against rotavirus infection. 4,341,763, Cl. 424-89.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF JULY, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Applied Power: *See—*
LeGrand, Pierre N.; and van Dalen, Dirk J., Re. 31,000, Cl. 33-180.0AT.

ARC Sales, Inc.: *See—*
Lemons, Thomas M., Re. 31,003, Cl. 362-287.000.

Ciba-Geigy Corporation: *See—*
Lind, Hanns, Re. 31,002, Cl. 544-221.000.

LeGrand, Pierre N.; and van Dalen, Dirk J., to Applied Power. Method and apparatus for reforming and straightening vehicles. Re. 31,000, Cl. 33-180.0AT.

Lemons, Thomas M., to ARC Sales, Inc. High intensity spotlight. Re. 31,003, Cl. 362-287.000.

Lind, Hanns, to Ciba-Geigy Corporation. N-(3-Hydroxyaryl-propyl)-imides. Re. 31,002, Cl. 544-221.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Takahashi, Hiroyoshi, Re. 31,001, Cl. 84-255.000.

Takahashi, Hiroyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Damper assembly of pianos. Re. 31,001, Cl. 84-255.000.

van Dalen, Dirk J.: *See—*
LeGrand, Pierre N.; and van Dalen, Dirk J., Re. 31,000, Cl. 33-180.0AT.

LIST OF DESIGN PATENTEES

Adenau, Marvin L., to AMD Industries, Inc. Windshield wiper products cabinet. 265,533, 7-27-82, Cl. D6-174.000.

AGA Aktiebolag: *See—*
Winqvist, Bengt G., 265,602, Cl. D34-28.000.
Winqvist, Bengt G., 265,603, Cl. D34-28.000.

Amcam International, Inc.: *See—*
Colby, Debra; and Crane, Nora, 265,551, Cl. D9-415.000.

AMD Industries, Inc.: *See—*
Adenau, Marvin L., 265,533, Cl. D6-174.000.

American Standard Inc.: *See—*
Paul, Stanley M., 265,579, Cl. D23-25.000.
Paul, Stanley M., 265,580, Cl. D23-25.000.

AMF Incorporated: *See—*
Joss, Michael S.; and Belletire, Steven P., 265,553, Cl. D10-40.000.

Baker, Richard; and Baker, Steven. Table. 265,532, 7-27-82, Cl. D6-146.000.

Baker, Steven: *See—*
Baker, Richard; and Baker, Steven, 265,532, Cl. D6-146.000.

Ballereaud, Pierre. Lipstick case. 265,600, 7-27-82, Cl. D28-88.000.

Basili, Robert A.; and Wilson, William B., to Plastic Reel Corp. of America. Video cassette storage container. 265,524, 7-27-82, Cl. D3-35.000.

Basili, Robert A.; and Weinstein, Gerald, to Plastic Reel Corporation of America. Cassette storage container. 265,525, 7-27-82, Cl. D3-35.000.

Bell Telephone Laboratories, Incorporated: *See—*
Fox, George R.; Illium, Herbert C., Jr.; Korby, Kenneth L.; and McGarvey, John N., 265,558, Cl. D14-55.000.

Belletire, Steven P.: *See—*
Joss, Michael S.; and Belletire, Steven P., 265,553, Cl. D10-40.000.

Bergquist, Gregory D.; and Jones, John A., to Simmons Universal Corp. Stool. 265,530, 7-27-82, Cl. D6-57.000.

Bergquist, Gregory D.; and Jones, John A., to Simmons Universal Corp. Chaise frame. 265,534, 7-27-82, Cl. D6-191.000.

Bergquist, Gregory D.; and Jones, John A., to Simmons Universal Corp. Chair frame. 265,535, 7-27-82, Cl. D6-191.000.

Bessasie, Joseph C., to Koss Corporation. Stereo headphone. 265,557, 7-27-82, Cl. D14-36.000.

Bladen, Roy V. Mounting for a tool holder. 265,522, 7-27-82, Cl. D2-400.000.

Bredemeier, David; Richardson, William P.; and Cassagnes, Andre, to Hasbro Industries, Inc. Drawing instrument. 265,572, 7-27-82, Cl. D21-59.000.

Brukoff, Barry. Seat. 265,531, 7-27-82, Cl. D6-71.000.

Brundige, Daniel G.; and Freund, Donald F., to Mead Corporation, The. Packaging drum for food. 265,548, 7-27-82, Cl. D9-352.000.

Bullard, Edmund P., Sr.; and Togni, Gary A. Wood burning stove. 265,583, 7-27-82, Cl. D23-97.000.

Butt, Sheldon H.; and Kleine, Charles A., to Olin Corporation. Three tube heat exchanger panel. 265,584, 7-27-82, Cl. D23-136.000.

Cappotto, Samuel D.: *See—*
Christie, Cornelius W.; and Cappotto, Samuel D., 265,566, Cl. D18-12.000.
Christie, Cornelius W.; and Cappotto, Samuel D., 265,567, Cl. D18-12.000.

Cassagnes, Andre: *See—*
Bredemeier, David; Richardson, William P.; and Cassagnes, Andre, 265,572, Cl. D21-59.000.

Cho-Pat, Inc.: *See—*
Gauvry, George R., 265,590, Cl. D24-64.000.

Christie, Cornelius W.; and Cappotto, Samuel D., to SCM Corporation. Ribbon cartridge. 265,566, 7-27-82, Cl. D18-12.000.

Christie, Cornelius W.; and Cappotto, Samuel D., to SCM Corporation. Ribbon cartridge. 265,567, 7-27-82, Cl. D18-12.000.

Chung Mei Metal and Plastic Factory, Ltd.: *See—*
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Mann, Kittson, 265,594, Cl. D26-37.000.

Clarke, Ann P., to Douglas Company, Inc. Clutch toy. 265,573, 7-27-82, Cl. D21-65.000.

Colby, Debra; and Crane, Nora, to Amcam International, Inc. Combined display and packaging container. 265,551, 7-27-82, Cl. D9-415.000.

Connolly, Peter, to Red Devil Inc. Glass cutting tool. 265,543, 7-27-82, Cl. D8-51.000.

Cooper Laboratories, Inc.: *See—*
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Cottrell, Samuel S. Computer terminal cover. 265,561, 7-27-82, Cl. D14-114.000.

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Messenger, Ronald L.; and Dodds, Gary M., 265,541, Cl. D32-74.000.

Dart Industries Inc.: *See—*
Lahay, Charles A., 265,587, Cl. D24-59.000.
Lahay, Charles A., 265,588, Cl. D24-59.000.
Lahay, Charles A., 265,589, Cl. D24-59.000.

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Donaldson, Donald L. Medallion. 265,555, 7-27-82, Cl. D11-110.000.

Douglas Company, Inc.: *See—*
Clarke, Ann P., 265,573, Cl. D21-65.000.

DuBois, R. Clark; and Hamma, John C., to Gradco/Dendoki, Inc. Continuous form feeding and copying apparatus. 265,564, 7-27-82, Cl. D16-30.000.

Dumas-Hermes, Jean-Louis F., to La Dumas Hermes S.A. Watch. 265,552, 7-27-82, Cl. D10-39.000.

East, Gary P.; and Schulte, Rudolf R., to Pudenz Schulte Medical Research Corp. Surgical drain. 265,585, 7-27-82, Cl. D24-51.000.

Erika International, S.A.: *See—*
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Fitzpatrick, Edmond J. Liquid dispensing comb. 265,599, 7-27-82, Cl. D28-25.000.

Formica Corporation: *See—*
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Forsberg, John R., to Helene Curtis Industries, Inc. Hair dryer attachment. 265,597, 7-27-82, Cl. D28-18.000.

Fox, George R.; Illium, Herbert C., Jr.; Korby, Kenneth L.; and McGarvey, John N., to Bell Telephone Laboratories, Incorporated. Coin telephone set panel enclosure. 265,558, 7-27-82, Cl. D14-55.000.
Freund, Donald F.: *See—*
Brundige, Daniel G.; and Freund, Donald F., 265,548, Cl. D9-352.000.
Galanter, Todd. Pipe. 265,595, 7-27-82, Cl. D27-03.000.
Garman, Jerald D., to Jerdon Industries, Inc. Hair dryer. 265,596, 7-27-82, Cl. D28-13.000.
Gauvry, George R., to Cho-Pat, Inc. Knee brace. 265,590, 7-27-82, Cl. D24-64.000.
Geller, Douglas A.: *See—*
Gillespie, Richard L.; Geller, Douglas A.; and McElroy, David C., 265,578, Cl. D23-9.000.
Gillespie, Richard L.; Geller, Douglas A.; and McElroy, David C., to Wham-o Mfg. Co. Children's play sprinkler. 265,578, 7-27-82, Cl. D23-9.000.
Gooding, Elwyn R., to Reagents of the University of Michigan. Youth hockey helmet. 265,520, 7-27-82, Cl. D2-231.000.
Gradco/Dendoki, Inc.: *See—*
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Gregory, Wally H. Postal bag tag rack. 265,528, 7-27-82, Cl. D6-24.000.
Groner, Steven R., to Sunbeam Corporation. Handle for a cooking or heating utensil. 265,540, 7-27-82, Cl. D7-132.000.
GTE Automatic Electric Labs Inc.: *See—*
Janda, George M., 265,559, Cl. D14-60.000.
Janda, George M., 265,560, Cl. D14-60.000.
Haeger, Virgil J. Combined hardware press and punch machine. 265,562, 7-27-82, Cl. D15-128.000.
Hamma, John C.: *See—*
DuBois, R. Clark; and Hamma, John C., 265,564, Cl. D16-30.000.
Hanson, Clive R.; and Hanson, Paul T., to Hanson Concrete Products, Inc. Trash receptacle. 265,542, 7-27-82, Cl. D34-11.000.
Hanson Concrete Products, Inc.: *See—*
Hanson, Clive R.; and Hanson, Paul T., 265,542, Cl. D34-11.000.
Hanson, Paul T.: *See—*
Hanson, Clive R.; and Hanson, Paul T., 265,542, Cl. D34-11.000.
Harmon, Donald L. Twisting novelty toy. 265,577, 7-27-82, Cl. D21-240.000.
Hasbro Industries, Inc.: *See—*
Bredemeier, David; Richardson, William P.; and Cassagnes, Andre, 265,572, Cl. D21-59.000.
Helene Curtis Industries, Inc.: *See—*
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Houts, Ronald C.; and Seim, William J., to Minnesota Mining and Manufacturing Company. Shipping enclosure for connecterized cable. 265,549, 7-27-82, Cl. D9-371.000.
Hyman, Richard M., to Cooper Laboratories, Inc. Toothbrush. 265,526, 7-27-82, Cl. D4-25.000.
Iijima, Takekazu, to Pioneer Kabushiki Kaisha. Loudspeaker. 265,556, 7-27-82, Cl. D14-30.000.
Illium, Herbert C., Jr.: *See—*
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Jackson, Frank W., II. Electrocardiogram analyzer. 265,565, 7-27-82, Cl. D18-9.000.
Janda, George M., to GTE Automatic Electric Labs Inc. Telephone instrument base. 265,559, 7-27-82, Cl. D14-60.000.
Janda, George M., to GTE Automatic Electric Labs Inc. Telephone stand. 265,560, 7-27-82, Cl. D14-60.000.
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Bergquist, Gregory D.; and Jones, John A., 265,534, Cl. D6-191.000.
Bergquist, Gregory D.; and Jones, John A., 265,535, Cl. D6-191.000.
Joss, Michael S.; and Belletire, Steven P., to AMF Incorporated. Timing device. 265,553, 7-27-82, Cl. D10-40.000.
Kalifa, Roger, to Erika International, S.A. Label dispenser. 265,568, 7-27-82, Cl. D18-19.000.
Kearnes, Thomas L., to Questor Corporation. Window well cover. 265,591, 7-27-82, Cl. D25-54.000.
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Kohler, Herbert V., Jr., to Kohler Co. Tub control fitting. 265,581, 7-27-82, Cl. D23-31.000.
Kohler, Herbert V., Jr., to Kohler Co. Bath tub. 265,582, 7-27-82, Cl. D23-55.000.
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Lahay, Charles A., to Dart Industries Inc. Urine collection device or the like. 265,588, 7-27-82, Cl. D24-59.000.
Lahay, Charles A., to Dart Industries Inc. Combined urine monitor and collector. 265,589, 7-27-82, Cl. D24-59.000.
Lamkin, Joseph P.: *See—*
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Lamkin, Robert E.; and Lamkin, Joseph P. Golf club grip. 265,576, 7-27-82, Cl. D21-222.000.
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Lorion, Ann. Lapel pin doll. 265,554, 7-27-82, Cl. D11-53.000.
Lunford, Doneathia. Frame for physical exercise. 265,575, 7-27-82, Cl. D21-191.000.
Macaluso, Kenneth C. Toothbrush design. 265,527, 7-27-82, Cl. D4-25.000.
Mann, Kittson, to Chung Mei Metal and Plastic Factory, Ltd. Battery operated lantern. 265,593, 7-27-82, Cl. D26-37.000.
Mann, Kittson, to Chung Mei Metal and Plastic Factory, Ltd. Battery operated lantern. 265,594, 7-27-82, Cl. D26-37.000.
Mascheroni, John. Ottoman. 265,529, 7-27-82, Cl. D6-36.000.
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Paul, Stanley M., to American Standard Inc. Combined spout and water control handles. 265,580, 7-27-82, Cl. D23-25.000.
Pavelka, Clement C. Cherry pitting machine. 265,539, 7-27-82, Cl. D7-106.000.
Perkins, John H. Protective ladder pad. 265,592, 7-27-82, Cl. D25-68.000.
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Prisbe, Ernest J. Paper feed control adapter for a printing press. 265,569, 7-27-82, Cl. D18-22.000.
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Simmons Universal Corp.: *See*—
Bergquist, Gregory D.; and Jones, John A., 265,530, Cl. D6-57.000.
Bergquist, Gregory D.; and Jones, John A., 265,534, Cl. D6-191.000.
Bergquist, Gregory D.; and Jones, John A., 265,535, Cl. D6-191.000.
Sloan, Noah H. Funnel for collecting urine. 265,586, 7-27-82, Cl. D24-54.000.
Societe Technisynthese (S.A.R.L.): *See*—
Vermonet, Christian, 265,521, Cl. D2-309.000.
Stockdale, Robert S. Cutting board and funnel unit. 265,537, 7-27-82, Cl. D7-46.000.
Sunbeam Corporation: *See*—
Groner, Steven R., 265,540, Cl. D7-132.000.
Nauheimer, Robert R.; Lockett, William L.; and Meyer, George D., 265,538, Cl. D7-87.000.
Radatz, Dennis E., 265,598, Cl. D28-18.000.
Togni, Gary A.: *See*—
Bullard, Edmund P., Sr.; and Togni, Gary A., 265,583, Cl. D23-97.000.
Treloar, Howard A. Lathe tool holder. 265,563, 7-27-82, Cl. D15-140.000.
Turcotte, Sidney J. E., Jr. Drinking glass. 265,536, 7-27-82, Cl. D7-6.000.
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Weinstein, Gerald: *See*—
Basili, Robert A.; and Weinstein, Gerald, 265,525, Cl. D3-35.000.
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Gillespie, Richard L.; Geller, Douglas A.; and McElroy, David C., 265,578, Cl. D23-9.000.
Wilson, William B.: *See*—
Basili, Robert A.; and Wilson, William B., 265,524, Cl. D3-35.000.
Winqvist, Bengt G., to AGA Aktiebolag. Combined gas cylinders and support frame for transport and handling thereof. 265,602, 7-27-82, Cl. D34-28.000.
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CLASSIFICATION OF PATENTS

ISSUED JULY 27, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

338 4,340,976

CLASS 3

1.5 4,340,977
1.911 4,340,978
13 4,340,979

CLASS 4

448 4,340,980
536 4,340,981
541 4,340,982

CLASS 5

93 R 4,340,983
296 4,340,984
442 4,340,985

CLASS 8

152 4,340,986
610 4,341,526

CLASS 15

93 A 4,340,987
104.3 SN 4,340,988
249 4,340,989

CLASS 16

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254 4,340,991
349 4,340,992

CLASS 17

25 4,340,993
45 4,340,994
62 4,340,995

CLASS 23

230 B 4,341,527
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CLASS 24

20 R 4,340,996
115 L 4,340,997
130 4,340,998
241 P 4,340,999

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159.3 4,341,001
235 4,341,002
239 4,341,003
275 4,341,004
411 4,341,005
434 4,341,006
451 4,341,007
467 4,341,008
571 4,341,009
580 4,341,010
590 4,341,011
620 4,341,012
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857 4,341,014

CLASS 30

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262 4,341,016
381 4,341,017
383 4,341,018

CLASS 33

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174 TA 4,341,020
180 AT Re.31,000
203.18 4,341,021
245 4,341,022
363 K 4,341,023

CLASS 34

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CLASS 37

2 R 4,341,025
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CLASS 40

534 4,341,028
607 4,341,029

CLASS 42

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CLASS 43

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CLASS 47

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CLASS 48

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399 4,341,073
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531 4,341,075
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225 4,341,086
233 4,341,087
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246 4,341,089
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CLASS 66

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11 LE 4,341,619
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69 W 4,341,939
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121 PU 4,341,941
123 4,341,944
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188.25 4,341,651
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299.63 4,341,653
301.4 H 4,341,654
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455 Z 4,341,660
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CLASS 323

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CLASS 324

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CLASS 329

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02 : 4,341,091	4,341,565	4,341,474	4,341,070	4,341,623	4,341,376
4,341,587	4,341,567	4,341,541	4,341,073	4,341,660	4,341,385
04 : 4,341,004	4,341,569	4,341,580	4,341,085	4,341,691	4,341,428
4,341,154	4,341,598	4,341,582	4,341,116	4,341,770	4,341,447
4,341,159	4,341,599	4,341,626	4,341,145	4,341,771	4,341,454
4,341,432	4,341,610	4,341,721	4,341,148	4,341,878	4,341,499
4,341,742	4,341,625	4,341,801	4,341,149	4,341,890	4,341,513
4,341,990	4,341,629	4,341,826	4,341,188	4,341,952	4,341,683
06 : 4,340,983	4,341,661	4,341,840	4,341,209	4,341,987	4,341,695
4,340,984	4,341,702	4,341,875	4,341,210	4,341,988	4,341,725
4,340,993	4,341,712	4,341,906	4,341,243	4,341,996	4,341,766
4,341,001	4,341,739	4,342,042	4,341,246	4,342,070	4,341,869
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4,341,015	4,341,764	4,342,115	4,341,280	19 : 4,341,048	4,341,982
4,341,030	4,341,767	10 : 4,341,439	4,341,320	4,341,131	4,341,995
4,341,033	4,341,851	4,341,452	4,341,330	4,341,237	4,342,059
4,341,052	4,341,866	4,341,601	4,341,341	4,341,285	4,342,080
4,341,055	4,341,873	4,341,673	4,341,347	4,341,311	4,342,089
4,341,077	4,341,921	4,341,743	4,341,362	4,341,377	4,342,114
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4,341,218	4,342,045	4,341,455	4,341,608	4,341,373	4,341,083
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4,341,255	4,342,060	4,341,514	4,341,681	4,341,891	4,341,180
4,341,262	4,342,097	4,341,540	4,341,689	4,342,031	4,341,193
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4,341,288	4,342,113	4,341,736	4,341,815	4,341,150	4,341,332
4,341,308	4,342,116	4,341,762	4,341,844	4,341,158	4,341,340
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4,341,420	4,341,238	4,341,561	4,341,104	25 : Re.31,003	4,341,820
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